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ART. I.—*Thoughts on the action and influence of the Nervous System, and on the means of strengthening and improving them.* By CHARLES CALDWELL, M.D.

THE nervous system consists of the brain, the spinal marrow, and their appendages the nerves.

The nerves are divided into two great classes; nerves of sensation; and nerves of motion. The former of these classes contains numerous subdivisions; the latter but two, nerves of voluntary, and nerves of involuntary motion. Of these two subdivisions of the motory nerves, the latter is still farther divided into nerves of perceptible and nerves of imper

ceptible involuntary motion. Of perceptible involuntary motion we have manifestations in the actions of the lungs, heart, stomach, and intestines; of imperceptible, or organic motion, in the processes of secretion, nutrition, absorption, calorification, and growth.

The brain which constitutes the centre of the whole nervous system, but more obviously of the nerves of sensation and voluntary motion, consists of the cerebrum and cerebellum, or the larger and the smaller brain, separated from each other by the *tentorium*. By the falx, another process of the same membrane which forms the tentorium, the cerebrum is divided into two similar hemispheres, each of which is subdivided into thirty-six or seven minor portions called organs, constituting the seats or instruments of an equal number of different faculties of the mind. The organs and faculties of each hemisphere differ from one another; but the corresponding organs and faculties of the two hemispheres are alike. Each hemisphere therefore is composed of the same number of organs differing in function from one another, but identical in their several functions with the corresponding organs of the opposite hemisphere. Hence is the brain, in organization and action, a double viscus, in all respects, as it more palpably is with regard to the arrangement of the external senses.

The spinal marrow is made up of three portions or cords, an anterior, a posterior, and a lateral or central one. Of these the anterior cord is connected with the roots of the nerves of voluntary motion; the posterior with the roots, or rather with the terminations of some of the nerves of sensation; while the remaining cord or portion forms what Sir Charles Bell calls the nerves of respiration; but which Muller, Hall, and other physiologists denominate the *excito-motory*

nerves. Under this immediate head I shall only add, that though the sound condition of the whole nervous system is essential to the full health and efficiency of every portion of the body; it is the derangement of the nerves of imperceptible involuntary or organic motion, that produces the most serious and fatal complaints. They are the nerves, whose action is more literally indispensable to the *existence* of life; while the action of the other portions of the nervous system is immediately productive of little or nothing else than *modifications* of life—or rather modifications of vital action. But before proceeding farther in this discussion, a few remarks of a more general and abstract character are requisite.

There are three great sets or groupes of organs which constitute the basis of the being and character of man—which form I mean the most substantial and fundamental part of him, and contribute most essentially to make him what he is. These are the contents of the three great cavities of the body, and their appendages—the cranium, the thorax, and the abdomen. In plainer terms, they are the brain, spinal marrow and nerves, the lungs, heart and blood-vessels, and the chyle-making viscera consisting of the stomach and intestines, the liver, pancreas, and lacteal apparatus.

These three groups of organs are intimately connnected with and dependent on each other, in a twofold way; through sympathy or consent of parts; and through function. On the former ground, the condition of either group, whether morbid or healthy, produces a like condition in one or both of the others; and, on the latter, a derangement or failure of function in one, occasions in the others a corresponding derangement. This connexion and dependence are only stated as facts, no effort being made or intended at present to adduce their causes.

Although these sets of organs are each equally essential to human existence, and equally dependent on one another for soundness and efficiency, they hold different ranks, as respects their functions. The abdominal organs, being fitted only for digestion and chylification, are of the lowest order, and belong in some shape to the lowliest beings of the animal and vegetable kingdoms. The organs of the thorax, being framed for the maturation and circulation of the blood, are of a higher rank, and belong to a higher description of animals. But the cerebral, spinal, and nervous organs, ranking in an order still superior, belong to beings of superior classes, and, in their highest perfection, bestow on man his noblest attributes, and place him at the head of the animal creation. It is plain therefore that the improvement of the nervous system, to the utmost pitch of which it is susceptible, should constitute the leading object of all sorts of education and training. And on the attainment of that object depend the future standing, achievements, and happiness of our race, and the peace, prosperity, and glory of the world.

Is any one inclined to regard this statement as exaggerated at least, if not actually erroneous; and to ask me, whether it is not from the cultivation and improvement of the *mind* that results so beneficial and resplendent are to issue? Were this question put to me, my reply to it would be affirmative; but I would add, that the improvement of the nervous system, especially of the brain, and the improvement of the mind, are the same.

We have no ground to believe, much less are we authorized to assert, that the mind, as an independent and insulated being, is improved, or, in the slightest degree altered by education and training. Indeed the alteration, either for better or worse, of a spiritual substance, by any kind of action or influ-

ence on it that can be practised by us, is an event of which no conception can be formed. The thought is too subtle and etherial for imagination to grasp. Far less do we know what means to employ for the production of the effect. Nor is such an effect necessary for the attainment of the object aimed at in mental education. The improvement of the brain, the organ or instrument with which the mind works in all its operations, is sufficient for the accomplishment of the end held in view. And that that can be effected, by the suitable employment of suitable means, is an issue as certain, as that any other portion of the body can be improved.

The brain is but a mass of living organized matter, and like muscles, membranes, and all other similar masses, can be ameliorated with ease in temperament and tone, activity and power. And when thus advanced in the excellence of its qualities as a mental instrument, it follows of necessity that the mind must employ it with superior effect. This is as much of an absolute truism, in its bearing on the relation between cause and effect, as that a harp of higher finish and tone, when swept with the same skill and power, discourses more "exquisite music," than an instrument of an inferior order when out of tune.

As respects the process best fitted to improve the brain in activity and power, it is too plain to be mistaken, and too perfectly in accordance with reason and experience, to be made a subject of doubt, much less of controversy. It consists in giving to the organ a due amount of suitable exercise, and supplying it sufficiently with wholesome and well arterialized blood. And to do this is not only practicable, but exceedingly easy. That the end, however, may be fully and certainly attained, it is necessary that the brain be properly exercised in *all* its organs—its *affective* as well as its *intellectual.*

Partial exercise, so far as it *is* partial, must be comparatively fruitless. On this topic I shall only farther observe, that it is not, in mathematics, a more incontestible truth, that parallel lines can never meet, than it is in physiology, that exercise, proper alike in kind, quantity, and time of employment, increases the strength and activity of living organized matter of every description.

The questions then that first present themselves are, what is meant by the exercise of the brain? and in what way may such exercise be given to it? Nor is there any difficulty in answering them. The exercise of the brain is the heightened organic action of it; and that is produced by every form of salutary excitement. To exercise the mind is to exercise the brain, whatever may be the kind of mental operation. Is the mind actively engaged in vision, hearing, perception, observation, remembering, imagining, reasoning, thought, calculation, or in any sort of moral or religious feeling? The brain is simultaneously exercised in the organs corresponding to the kind of mental action pursued. Does the mental action consist in the indulgence of any of the passions or emotions?—in love or friendship, resentment or desire of revenge, in ambition, covetiveness, hope, wonder, or the contemplation and enjoyment of the sublime or the beautiful? In each and all of such cases does the brain conform in exercise to that of the mind. And its organs thus excited to action are invigorated and improved in aptitude for the performance of their functions.

That the brain may be the more certainly and competently strengthened and improved, I have said that it must be liberally supplied with arterial blood. And this end is more or less accomplished by the excitement it undergoes. "*Ubi irritatio, ibi affluxus*"—in whatever part of the body irrita-

tion or local excitement occurs, to that spot takes place a conflux of blood. And this is a maxim of as unquestionable truth, as is that which asserts, that things equal to one and the same thing, are equal to one other. Hence in cases of deep passion, such as anger and joy, (which are nothing but high cerebral excitement and action) the countenance is flushed and full, the eyes become fierce or sparkling and prominent, and at times the head turns painful and giddy, in consequence of the rush of blood to the parts. And in these instances the energy and power of action imparted to the brain, are strikingly manifested, by the unwonted force and rapidity of conception and thought, and the augmented fluency and eloquence of utterance, which mark the occasion.

Not only moreover does the blood flow to the brain in a larger volume; it is also more highly arterialized, than usual. Of this the reason is sufficiently obvious. The high and powerful action of the brain produces through sympathy a like condition in the lungs and heart; which latter organ, by its strengthened and accelerated pulsations, pours into the former an augmented stream of blood. Here again there is an increase of action. Respiration becoming more frequent and full, a larger amount of air is received into the lungs. The blood is hence more highly arterialized, and, passing in this condition to the left side of the heart, is thrown in greater force and quantity into the brain, the more thoroughly to vitalize, excite, and invigorate that viscus. Thus do the viscera of those two cavities, the skull and the thorax, operate on each other in a circle, or in a flux and reflux of influence, to the mutual increase of their power and action. Nor is this all.

The viscera of the third great cavity, the abdomen, which prepare the chyle, participate extensively in the general work.

Daily experience and observation testify, that, both through function and sympathy, the digestive organs are closely and powerfully connected with the heart, lungs, and brain. Without a sufficient amount of sound and well matured chyle, wholesome blood cannot be prepared in the quanity required for the uses of the system. And without such a stock of blood, neither vivification nor nourishment can be competently effected, and the brain, in common with other organs, must fail in its functions. Be the substance and nature of the vital principle, what they may, and from whatever source that principle may be derived, the arterial blood possesses it, and implants it in the solids of the body. Hence, other things being alike, the higher the pitch to which the vitalization of the blood is carried, the higher is the vitalization of the whole system; and, as far as consists with health, the greater the accumulation of arterial blood in any particular portion of the system, the higher is the vitality of that portion, and the more vigorous is its action. And this is as true of the brain and whole nervous system, as of other organs. That the brain therefore may possess the fullest amount of vitality, and the amplest power of action, of which it is susceptible, it must be supplied with as large an amount of well arterialized blood, as comports with its health. To express myself in plainer and more definite terms; what is true of every other organ, is equally so of the brain. To bestow on it the utmost power and activity of which it is susceptible, an actual orgasm, or state of vital erection must be produced in in it, by a thorough impregnation of it with arterial blood. The correctness of this position is easily proved. Passion, as already observed, consists in a state of the highest cerebral excitement that can co-exist with health; and it is the source of consummate mental energy and action. Let, therefore, a

dog, a cat, a buck, or any other animal, be suddenly killed, during a paroxysm of rage, and its brain be examined, and the organ will be found almost as deeply injected with blood, as if it were in a state of actual inflammation.

To produce in the nervous system then, including the brain, the highest degree of power and activeness, of which it is susceptible, the work must be commenced in the chylopoetic organs. Those organs must be supplied with a suitable amount of wholesome and nutritious food. And care must be taken, that the amount be kept within the bounds of temperance. Thus will the organs, besides being invigorated themselves by salutary and natural exercise, produce, for the formation of blood, the necessary quantity of well-prepared chyle. For the conversion of this into wholesome blood, the lungs, in addition to a due degree of exercise and excitement by talking, declaiming, shouting, singing, and other forms of muscular action, must be liberally supplied with fresh and unvitiated atmospherical air. The same general muscular exercise that gives strength and activity to the lungs, produces a similar effect on the heart, and qualifies it for a vigorous circulation of the blood. And by such circulation the brain is injected with arterial blood sufficient in amount to invigorate it and prepare it for the extension of its influence, in return for what it has thus received from them, to the lungs, heart, and digestive organs, in common with all other parts of the body.

Such are the mutual influences and dependencies of the three leading groupes of organs of the body, by means of their functions. Their connexions by sympathy are equally stable, and their influences on one another, through that channel, more prompt and powerful in their immediate effects. Where one individual perishes from derangement of the func-

tional influences of those organs, (that of hemorrhagy alone excepted,) thousands perhaps perish by the action of their sympathies. And the same is true in relation to recoveries and cures. The number of diseases removed by sympathy is immeasurably greater than the number successfully treated through the medium of function—but when both are brought into action, the influence is the greater, and the issue the more speedy, certain, and salutary.

But I have not yet stated fully and circumstantially what I mean by the phrase, "the action and influence of the nervous system." A few remarks to that effect therefore will now be in place.

This subject presents itself in several different divisions and bearings, and might be somewhat extensively considered under each of them, though my observations at present respecting it must be brief. It stands equally related to health and disease; and, in each of those conditions of the system, is connected alike with the operations and phenomena of the body and the mind. It is equally concerned moreover with the production, prevention, and cure of disease.

In health the range of nervous influence is co-extensive with that of the body itself. In every part of the system it is manifested and felt. Its most striking manifestation, as respects the body, is made by muscular motion, voluntary and involuntary. More or less however it is concerned in every form of vital action—I mean in the system of man, and in the systems of those animals that most nearly approach him in organization and character. In vegetables, and in many of the lower tribes of animals, a system of nerves exerts no influence, because it has no existence in them. In man however, and in other grades of animated nature where that system is developed, its influence takes part in digestion and

chylification, absorption, nutrition, the arterialization of the blood, calorification, sleeping, waking, and dreaming, secretion, excretion, and growth. Were this statement contested, its proof would be ready; and, as part of it, the following may be received as satisfactory and conclusive. Destroy or paralyze the nerves belonging to any part of the body, and the processes just specified are impaired or extinguished in it.

In disease the nervous system is deeply involved in apoplexy, palsy, epilepsy, St. Vitus's dance, hysteria, tetanus, hydrophobia, colic, and every other form of convulsive and spasmodic affection. In these complaints it is chiefly the brain, spinal marrow and cerebro-spinal nerves that are concerned. They at least are most *obviously* and *strikingly* concerned. And in all febrile diseases, whether slight or severe, the ganglionic nerves are necessarily deranged. There is reason to believe, that in every complaint, some portion of the nervous system is *primarily* assailed, as constituting essentially the out-posts of the body. Nor is it less true that all curative articles make their first impression *immediately* on the nerves, especially the ganglionic nerves, which are instrumental in the production of *organic susceptibility;* and the impression passes to other parts of the system chiefly by sympathy.

In its connexion with the mind, the nervous system, especially the brain, both prevents and produces a variety of diseases. That organ, as has been heretofore observed, is the immediate instrument of the mental affections. And in protecting the system from certain complaints, and also in their production, some of those affections have great influence. Thus, during the prevalence of yellow fever, oriental plague, Asiatic cholera, and other epidemics, habitual timidity predis-

poses to those maladies, and a paroxysm of fear very often excites them. And calmness, firmness, and steady resolution are among their most efficient preventives. The operation of hope, by producing habitual cheerfulness, and a belief in the probability of escape, is also a very valuable safe-guard, unless it give rise to a want of precaution, leading to uncalled-for and perilous exposure. Hence, during the devastation of pestilential epidemics, those individuals (and for the honor of our race they are numerous) who calmly and fearlessly mingle with the sick, and minister with kindness and assiduity to their wants—such persons I say very generally escape the malady; while the fearful and the agitated, who shut themselves up in their own dwellings, shrink from the approach of a nurse or a physician who has visited in the house of sickness, turn pale at the sight of a herse or a coffin, and are startled by the sound of a funeral bell—these tremblers are far the most uniform subjects of attack. The reason is plain. Fear debilitates their systems in all respects, and very especially in their prophylactic powers. To such an extent is this true, that the heroic philanthropists, here alluded to, have been *often* supposed by the multitude, and *always* by the most credulous portion of it, to be in possession of some protective medicine or talisman, or to be under the immediate protection of Heaven. But, as respects either reputed source of safety, the supposition is not only groundless, but superstitious and silly. The prophylactic charm is altogether mental. It is a compound of calmness and prudence, temperance, resolution, cheerfulness, and active engagement. I say "active engagement;" for, on such occasions, *action* is infinitely preferable to *inaction*. The former strengthens the system in all its powers; while the latter enfeebles it. And those who are engaged and interested in business, have no leisure to listen

to the alarming narratives of others, or to indulge their own apprehensions of danger. In proof of the correctness of these remarks, facts and anecdotes might be derived in abundance from the lives and histories of fearless philanthropists, who, in pestilential periods, have defied danger and death, in the cause of humanity, and escaped with impunity. That there may be something in the corporeal organization and temperament, which renders some individuals less susceptible of certain forms of disease than others, is altogether probable. But, in the cases referred to, I cannot doubt that escape is ascribable chiefly to the constitution of the mind.

Disappointed love, grief, the bitterness of violated friendship, jealousy, blighted ambition, wounded pride, the canker of remorse, nostalgia or frustrated longing of absentees to return to the delights of their native countries and their homes, and mental dejection, from whatever cause it may arise, are often productive of serious disease. So are violent paroxysms of the stronger and stormier passions, such as rage, the lust of vengeance, and even an excess of sudden and unlooked-for joy. And all these are but so many manifestations of the existing condition of the nervous system.

The complaints resulting from nervous action correspond in character to the action itself. Is the action sudden, violent, or acute? So are the diseases produced by it. Thus a fit of rage, an abrupt and overwhelming eruption of joy or sorrow, terror or despair, give rise to apoplexy, palsy, hysteria, epilepsy, and other forms of convulsion, and also to hemorragy from the rupture of large blood vessels, or even of the heart itself, and at times to an immediate extinction of life. In the latter case the shock received operates on the brain and nerves like the crush of a falling and ponderous body, or

like a blow on the head from a massy weapon and a powerful arm.

In like correspondence with their nature and character, disappointed love and ambition, moderate but protracted grief, remorse, nostalgia, and other chronic and cerebral affections are productive only of chronic complaints. Of these I may specify, as among the leading maladies thus engendered, madness, dyspepsia, chronic hepatitis, jaundice, general tabes and pulmonary consumption. Other insidious and wasting affections might be added. But, as concerns the instrumentality of nervous influence in the *production* of disease, the foregoing examples are believed to be sufficient for illustration and proof.

The *therapeutic* influence of nervous action is yet to be considered. This is denominated "moral medicine," and is a subject not only extensive in its limits, rich in matter, and abundantly curious, but highly important in the treatment of disease.

As the phraseology itself implies, moral medicine consists in the production of moral or mental impressions immediately on the brain, through the medium of the senses. To render the practice successful, these impressions must be such as are best calculated to produce in the brain a healthful condition. That organ, possessing as it does, a predominant influence over the other parts of the body, does much, when sound itself, to communicate soundness to the entire system. Hence the great importance of keeping it, in all cases, as far as possible, in a state of health. The degree of action moreover maintained in it must be judiciously adapted to the character of the complaint under treatment. That it may prove a salutary remedy, it must be employed with skill, as respects both quantity, manner, and time. If the disease be inflammatory, or one of high excitement with-

out inflammation, the brain should be kept tranquil, more especially if the affection be in any degree cephalic. But in complaints of languid action, the tone and excitement of the brain should be heightened.

This practice is more extensively and perhaps more skilfully pursued in France, than in any other country. Nor is it improbable that, from the superior sensitiveness of their systems, the native French population are more susceptible of benefit from moral medicine, than any other people. And next to them perhaps, in this respect, come the Irish and the natives of the United States, who are certainly a more susceptive and impressible people, than either the British, Hollanders, Belgians, or Germans. Hence the propriety and usefulness of cultivating and employing this form of practice among ourselves.

The forms of disease which moral medicine, when skilfully administered, always soothes and relieves, and often removes, are numerous, and many of them of a grievous and dangerous character. Only a few of them, however, can be specified at present.

Among these, *insanity* holds the most conspicuous place; because it assaults and deranges or entirely destroys what constitutes, not only the highest and brightest attribute, but the very essence of human nature. For the understanding and rational treatment of this malady, an acquaintance with phrenology is indispensable—as literally and positively so, as an acquaintance with the anatomy and physiology of the thoracic viscera is to the rational treatment of complaints of the chest.

The ground of this assertion is plain and substantial. In a vast majority of cases, if not in every one, insanity, at its commencement, is a *local affection.* It is, I mean, a derange-

ment of but *one* or *a few* of the cerebral organs and their functions. For it is not now to be made known that madness is as entirely and essentially a disease of organized matter (the mind as a separate substance or entity being perfectly uninjured) as is pneumonitis or rheumatism. And in perhaps every case, I say, that disease begins in one or two organs, and spreads, with more or less rapidity, until a larger portion of the brain becomes involved.

Nor can any one but a physician acquainted with prenology discover, at this early period, when alone the evil is *certainly* tractable, the exact seat of the complaint, and ascertain to what extent the brain is deranged. No other physician therefore is so well prepared to encounter the malady with the proper form of treatment; especially of moral treatment. But I must dwell on this point no longer. My object is not to write an essay on the cure of madness; but to show that it is a complaint, to whose cure moral medicine is peculiarly adapted; and that, other things being alike, the phrenologist is best qualified to administer that medicine. And if the deranged organs be too highly excited, the proper moral administration consists in reducing that excitement, by bringing them into a state of rest, and transferring their action to other organs, on the principle of revulsion. To illustrate my meaning by a familiar example.

Has the patient induced his malady by intense application to a favorite study? Let him abandon that study, and engage in some other less arduous and severe, and which will give suitable exercise to other cerebral organs than those which he has overworked and injured; or let him relinquish for a time all real study, and enjoy relaxation and pleasurable exercise both mental and corporeal, in travelling, hunting, gardening, or some other amusing pursuit, and in social inter-

course with his family and friends. By such treatment, if adopted in time, and duly persevered in, may insanity be averted with as much certainty and ease, as any other malady can be thrown off, before it has fairly taken root in the system. And by such means it frequently has been averted.

Nostalgia is another complaint within the control of moral medicine. And its treatment is simple. Let the sick return to their country and home, and then is recovery certain. This is but giving rest to an over-excited cerebral organ, and is analogous to the treatment and cure of a sprained ancle-joint, or a fractured limb, by quietude, ease, and soothing applications.

The disease produced by *disappointment in love* is in like manner within the reach of moral medicine. Nor is there the slightest difficulty in its successful treatment, provided the curative means can be applied. And those means may be stated in a few words. They consist in a return of affection by the beloved object, and the rites of matrimony. Except in cases where some confirmed and fatal *secondary* affection is produced by delay, these remedies never fail.

In the cure of *dyspepsia* moral medicine, skillfully employed, is peculiarly efficacious. Indeed if the complaint, as is very often the case, be induced by mental causes, that form of medicine is indispensable, and sufficient of itself, provided its application be opportunely made.

In the treatment of this disease, the removal of care, grief, and all other forms of mental perplexity, and the cheerfulness and serenity thus produced, are among the most useful and important of remedies. Add to them out-of-door exercise, temperance, and the influence of a salubrious atmosphere, and the complaint can hardly fail to give way. Hence the benefit derived by dyspeptics from travelling, a sojourn at watering

places, and sea-voyages, where the operation of all these remediate agents may be united.

To speak on this subject in general terms. In the treatment of every form of disease resulting in any measure from cerebral derangement, the employment of moral medicine is essential to success. The reason is obvious. To do away an effect, you must first do away the cause. If therefore any sort of cerebro-mental influence has produced the complaint, such influence must be removed, else the complaint will remain. And by moral medicine only can the removal be effected.

As heretofore intimated, all persons are not so constituted, as to derive the same degree of benefit from moral medicine. Different individuals are endowed with different shares of sensitiveness and impressibility. And, other things being equal, the effect of moral treatment will be in direct proportion to the impressibility possessed. Hence, for receiving benefit from such treatment, women are more suitable subjects than men; because their sensibility is greater. And, for a similar reason, the youthful of the same sex are more suitable than the older.

In the cure of all chronic, debilitating, and depressing complaints, the agency of hope, resolution, and cheerfulness, faith in remedies, and confidence in physicians, is efficacious and powerful. And all these belong to moral medicine. So does the influence of bravery and ambition in the soldier and the sailor. And that has removed, at times, some of the most grievous and obstinate of maladies. The following instances are in proof of this; and many other similar ones might be added.

During the last war between the United States and Great Britain, a memorable battle was fought by the fleets of the

two nations, on Lake Erie, in the year 1814 or '15. For about forty-eight hours (I think) before the action the two squadrons were in sight of one another, manœuvring each to gain the windward quarter. At the time when the British squadron first made its appearance, and the occurrence of an engagement was no longer doubtful, a full third part, if not more, of the American officers and sailors were confined to their berths, by severe illness, or its debilitating effects. Their complaint was the *lake-fever*. But such was the effect of their desire to come to action with the enemy, and of their ambition and determination to vanquish him, that, at the commencement of the conflict, nearly every man was at his post, prepared to do his duty. The result was a decisive and glorious victory.

Near the close of our revolutionary war, a similar event occurred, in the great naval action, fought not far distant from the American coast, between the French and British fleets, the latter commanded by admiral Rodney, and the former by the Count de Grasse. When the two fleets first descried each other, and an approaching conflict was certain, a very large portion of the British crews were confined to their hammocks by scurvy. From the manœuvring which followed, however, between the parties, each striving to gain the wind of the other, two days or more elapsed, before they came to action. During this interval, so salutary on the British sailors was the influence of their courage, ambition for battle, and confidence of victory, that, when the engagement commenced scarcely a man was absent from his gun. The issue is known. The French fleet was almost annihilated.

Again. In the disastrous retreat of the French army from Moscow, thousands on thousands of the soldiers are known to have perished, exhausted by fatigue and hunger, and stif-

fened by cold. And when, from the insupportable and agonizing agency of those three destroyers, whole regiments were ready to sink to the earth, and there expire, the approach and assault of the Russians or Cossacks on their rear or flank, never failed to revive and arouse them to a desperate and vigorous resistance. And no sooner was the enemy repulsed, than they all returned to their enfeebled condition; and hundreds of them, not from recent wounds, but from exhaustion and torpidity, dropt at the feet of their comrades, to rise no more. So powerful on their wasted and enfeebled systems, was the influence of the pride of soldiership, invincible bravery, and an ambition to conquer.

Once more. The following fact, transmitted to us on respectable authority, is well worthy of the attention of all physicians, but more especially of those of the army and navy.

"In the year 1625, the city of Breda suffered, from a long seige, all the miseries that fatigue, bad provisions, and distress of mind could bring on the inhabitants. Among other misfortunes, the *scurvy* made its appearance, and carried off great numbers. This, added to the other calamities, induced the garrison to incline towards a surrender of the place; when the Prince of Orange, anxious to prevent its loss, and unable to relieve the garrison, contrived, however, to introduce letters addressed to the men, promising them the most speedy assistance. These were accompanied with medicines against the scurvy, said to be of great price, but of still greater efficacy; many more were to be sent there. Three small vials were given to each physician. It was publicly given out, that three or four drops were sufficient to impart a healing virtue to a gallon of water. We now displayed," (says the narrator, who was himself a physician belonging to the

garrison, and engaged with his colleagues in the moral practice—for it was nothing more)—"we now displayed our wonder-working balsams. Not even were the commanders let into the cheat practised on the soldiers. They flocked in crowds about us, every one who had the scurvy soliciting that some part might be reserved for his use. *Cheerfulness* again appears in every countenance, and an universal *faith* prevails in the sovereign virtues of the remedies. The effect of this *delusion* was truly astonishing; for many were quickly and perfectly recovered. Such as had not moved their limbs for a month before, were now seen walking the streets with their limbs sound, straight, and whole. * * * Many, who had declared that they had been rendered worse by all former remedies, recovered in a few days, to their inexpressible joy, and the no less general surprize, by taking what we affirmed to be their gracious Prince's cure." From this occurrence, the drug, whatever it might have been, was afterwards known by the name, sometimes of the "Prince's," and sometimes of the "Commander's Balsam."

It is by the like operation of *hope* and *cheerfulness*, confidence in their own skill and faith in their remedies, that quacks perform many remarkable cures, in cases where educated physicians, employing no moral means, had practised unsuccessfully. Nor is this all.

Homœopathy is virtually a scheme of moral medicine. It is not to be fancied, even by the most enthusiastic credulity, that the material remedies administered by Hahnemann and his followers, in doses so infinitely minute, can have the slightest influence in the cure of diseases. Yet, that cures, at times very remarkable, are produced by their practice, is not to be denied. To what then is their success attributable? The answer is easy. It is the product of several causes—a

temperate and well directed diet and regimen, which they strictly enjoin; and of cheerfulness, hope, and a firm belief in recovery, which they sustain in their patients, by their confident and unqualified assurances of success. Thus do they produce and maintain in the brain a sound and salutary condition; while that organ extends a healing influence throughout the system.

Other things being alike, moral remedies act most powerfully and successfully on persons of an active temperament, whose organs of Hope and Wonder, Benevolence, Ideality, and Firmness are largely developed. Hence; as respects this form of practice, the beneficial effects of an acquaintance with phrenology. It enables the physician to detect in his patients their greater or less fitness for moral treatment.

REVIEWS.

Art. VI.—*Elements of Pathological Anatomy, illustrated by numerous engravings.* "In Morbis, sive acutis, sive chronicis, viget occultum, per humanas speculationes fere incomprehensible."—Baglivi. By Samuel D. Gross, M.D. Late professor of General Anatomy, Physiology, and Pathological Anatomy, in the Medical Department of the Cincinnati College. Vol. II, 8vo., Boston, 1839. Marsh, Capen, Lyon & Webb and James B. Dow.

(*Continued from the August number.*)

We pass by the next three chapters on hœmorrhage, softening and gangrene, to trace out the progress of purulent secretion through ulceration, granulation and cicatrization, all of which display the presence of pus. Ulceration implies excessive absorption, in connexion with purulent secretion. This remark must, however, be understood with some limitation. During the suppurating process, before the opening of an abscess, we have no evidence of increased absorption, but the reverse; and, subsequently, while the cavity is filling up, absorption does not appear to be active; again, parts which have lost their vital properties slough off, leaving excavations

or depressions, that have not depended on absorption: in many cases, moreover, absorption is deficient and the granulations rise above the proper level. Some, particularly the last of these suppurating surfaces are ulcers. Our author does not believe in ulceration without inflammation conjoined with increased absorption, but concedes that the secretion of pus is not necessary.

We do not, however, believe in the existence of those cases. The purulent secretion may be scanty, but analogy justifies the conclusion, that in all cases where inflammation and excited absorption, by their combined action, produce an ulcer, that is, the destruction of the surface of a tissue, there is purulent secretion. Surgery is often called to grapple with ulcerative action, and sometimes foiled. Ulcers occasionally spread far and wide, in despite of every effort. In many of these cases, the constitution is in fault; in others the ulcerative action is specific.

Granulation, the subject of the next chapter is, intimately associated with this. Granulation exhibits two secretions, the lymphatic and the purulent. Coagulable lymph is the material out of which the granulations are formed, and into which the vessels that supply them so liberally with blood, extend from the surrounding parts; but these granulations are themselves secreting surfaces, and the fluid *they* pour out is pus, perhaps also lymph. The surgeon judges of their healthy condition, as he judges of the state of other secreting organs—by the quality of the discharge.

The natural and desirable termination of this series of sanito-morbid actions is in cicatrization or skinning, which makes the subject of the next chapter; and from which, for the purpose of varying the style of our analysis, we shall make a short extract.

"Cicatrization is the process which nature employs to heal wounds and ulcers. It is the finishing stroke, if the expression be allowable, of granulation,—the labor which is necessary to polish the surface of the sore, to contract its diameter, and to bring it as nearly as possible to a level with the surrounding structures. This process, although it is not limited to the skin, as might be inferred from reading some modern treatises on surgery, is yet most advantageously studied there, as it enables us to follow nature as it were in the different steps which she employs with a view of accomplishing her enterprise.

"The first step in the healing of an ulcer seems to be the subsidence of the inflammation, which becomes gradually less and less, until the surrounding parts regain their natural color, form, and consistence. The sore at the same time sensibly diminishes in diameter, by the contraction and coalescence of its granulations; and its surface, instead of being rough and uneven, assumes a smooth, glassy appearance, its centre, however, being still considerably depressed; or, if the granulations have been very exuberant, unnaturally elevated. Cicatrization is now observed to begin, the first indication of it being a thin, delicate, bluish pellicle, placed along the margin of the breach, where it soon unites with the old skin by an interchange of vessels, nerves, and absorbents. If the part be inspected at a later period, the substance that was thus deposited and organized, will be found to have increased in thickness and density, and to be gradually extending itself towards the centre of the ulcer by the addition of new matter. It is in this manner, by this successive experipheral action, that the denuded surface is eventually covered over."

If we are not greatly mistaken, cicatrization sometimes commences on the disks of ulcers, at a distance from their margins.

We cannot dwell longer on these chapters, all of which abound in elementary truths of great moment to the surgeon; and shall pass to some other modes of termination, or effects of inflammation.

Inflammations of intense violence are liable to end in gangrene. It is common to say, that if the constitution is feeble, a slighted inflammation may destroy the irritability and

organization of the part; but these inflammations, in their intensity, bear perhaps the same relation to the powers of the system, as the former. It is not uncommon for medical men to speak of *a* gangrenous inflammation, but this is generally a misnomer. It is correct to speak of *a* gangrenous *termination* of inflammation.

"When this event is about to take place, the affected structure loses its sensibility, it becomes cold, the blood ceases to circulate, and absorption is suspended.

"The process by which these changes are accomplished is generally progressive, its rapidity varying with the constitution of the patient, the violence of the exciting causes, and, above all, the nature of the suffering structure. Thus, gangrene, in some cases, takes place in the course of a few hours, whilst, in others, it does not make its appearance for several weeks or even months from the commencement of the inflammation. Much diversity prevails amongst the different organs and tissues in regard to their liability to become affected with this lesion. The cellular, cutaneous, and mucous, may be enumerated as the textures which are more frequently seized with mortification than any other; and it is worthy of remark that these are parts which are extremely well supplied with blood, especially the two latter. Nevertheless, in the skin and cellular substance, this event takes place most frequently in situations which are remote from the central organ of the circulation, as on the hands, feet and posterior portions of the trunk. In the mucous system, the parts most liable to mortification are the gums, the inside of the cheeks, the tonsils, the colon, the inferior third of the ileum, the urinary bladder, and the lining membrane of the vulva. The serous membranes, muscles, ligaments, tendons, aponeuroses, and cartilages are rarely affected in this way; and the same remark holds good in reference to the arteries, veins, and absorbents. The three latter of these structures, indeed, seem to possess a most astonishing conservative power, and hence it is not uncommon to find them retain their integrity in the midst of the sphacelated part. In malignant scarlet fever, attended with mortification of the tonsils and upper part of the neck, I have several times seen the common carotid go on in the performance of its function, and the individual recover, notwithstanding the detachment of immense sloughs of the skin and cellular substance; and similar phenomena have often been witnessed in gangrene of the inferior extremities."

When a part mortifies, the vital activity is greater as we advance in all directions from the dead centre. The arrest of the surrounding inflammation, is the arrest of the gangrene. An ulcerative action is then set up, and the decomposed parts are cut loose from the sound. No hœmorrhage follows, because the larger arteries leading to the part have been converted into impervious cords, by the stasis of the blood in their extremities and the adhesion of its fibrin to their internal parietes.

Gangrene does not always depend on violent inflammation from common causes, but occasionally on specific influences acting on the constitution. This is what happens when ergot is used with bread. In these cases, the parts exhibit a certain degree of pain, heat and redness, before they become gangrenous. The *gangrena senilis*, sometimes scarcely manifests the slightest degree of precursory inflammation, as we had an opportunity not long since of observing in a fatal case of that malady, commencing in the heels of an elderly woman and extending forward and upward. We had not the privilege of examining the parts after death. This variety of gangrene has been said to arise from obliteration of the arteries, but is it possible, when obliteration exists, that it is an effect rather than a cause, seeing that the same vessels become obliterated in ordinary mortification?

Another effect of inflammation is *softening*, to which our author has devoted a short chapter. He regards it as among the most unequivocal signs of previous inflammation—that is, one of the legitimate effects of that mode of morbid action, especially when acute. We may assume, that inflammation which occasions softening, does not cause much lymphization. In softening the tissue tends in its organization to that of some other resembling it, but naturally less firm.

Thus bone becomes cartilaginous; cartilage is made to resemble fibro-cartilage; cartilage, fibrous membrane; and this, as well as the serous and mucous membranes, to assume some of the qualities of the cellular. It is obvious, that deposites of coagulable lymph would retard, rather than promote this series of changes. Softening is sometimes the only test of pre-existent inflammation in the brain and gastro-enteric mucous membrane, and hence it is of great importance for the pathological anatomist to have an accurate knowledge of the variations of normal density exhibited by those tissues.

Softening, as we have already said, does not always depend on inflammation. Whatever impairs the nutrition of a tissue, will tend to produce its decomposition.

Induration is in some degree the opposite of mollescence, *ramollisement* or softening, and often shows itself as governed by the same law. Thus cellular may be converted into fibrous membrane, cartilage into bone, &c. But in other cases the tissues are consolidated with each other by deposits among them of plastic lymph. In speaking of the causes of this pathological state Prof. Gross remarks:

"These are referable, for the most part, to inflammation, followed by an effusion of coagulating lymph into the interstitial substance of the affected organ. In the lungs there is frequently, in addition to this, more or less blood poured out, which, combining with the natural structures, gives them a red color. It is thus that red hepatization is established. In chronic cases, on the other hand, the induration is commonly effected by the lymph alone; and hence it is that the organ is usually of a much lighter hue. In the hardening of the subcutaneous cellular tissue of infants, a disease of pretty frequent occurrence in certain districts of Europe, the effused matter is generally impregnated with two coloring principles, the one of an orange red, the other of a bluish shade, both of which are stated by M. Chevreul to exist in the blood."

The chapter on hæmorrhage is full of interest, but we have

not space for its analysis. Professor Gross is of opinion, that in most cases not dependent on a mechanical lesion of the vessels, the hœmorrhagic action is more or less inflammatory. In evidence, among other facts, he cites the constitutional and local symptoms attendant on menstruation, especially when painful. We are aware, that many cases of the latter are inflammatory, but in these the discharge is generally sparing, whereas it ought to be copious, if caused by an inflammatory action. It is impossible to believe, moreover, that inflammation attends the profuse hœmorrhages connected with the final cessation of the menses, inasmuch as none of the ordinary symptoms of inflammation, either pelvic or constitutional, are present; and the discharge is best restrained by a treatment, the reverse of that which is adapted to the cure of inflammation. Hœmorrhages from the other mucous membranes are often mere exhalations; but in hæmoptysis the discharge is not always from the bronchial membrane. We recollect a case in which it came from an artery of considerable size, divided by ulceration, and remaining pervious. We are quite convinced that many hœmorrhages depend on a morbid state of the blood—perhaps on a diminution of its albuminous ingredients, whereby it passes through tissues, which were only competent to its confinement while it remained in a normal state.

Hypertrophy and atrophy are the subjects of separate chapters. We can but glance at them. Hypertrophy may be either general or topical. The last by far the most interesting to the physician and surgeon, generally arises from too great a determination of blood to the part. This may be the result of an irritation maintained within it for some time, raising more or less of inflammatory action; or of its being thrown into excessive action. The heart may furnish an ex-

ample of both. Under the influence of certain passions, that organ becomes hypertrophied; and again, when the valves, seated at the outlet of any of its great cavities, become impaired in their structure, the parietes, from the increased labor they are called upon to perform, acquire abnormal dimensions. We lately saw a heart in the possession of Dr. Enders, in which this was beautifully illustrated by the valvular vegetations, which obstructed the passage of the blood through the organ.

Atrophy, the opposite of hypertrophy, often coexists with it in the same compound organ. Thus while one tissue is reduced below its proper size, another may be increased beyond—and *vice-versa*. More commonly, however, all the tissues of an organ are equally reduced. Atrophy implies deficient nutrition, or excessive absorption. Pressure external or internal frequently leads to it, and is said, in the common parlance of the profession, to do so by promoting absorption. In these cases, however, the supply of blood is limited by the compression of the nutrient arteries. In this manner portions of the lung and liver are occasionally greatly reduced in size—contracting coagulable lymph having been effused about and within them. The causes of atrophy are, however, extremely various. Thus the disuse or rather non-use of an organ or a limb rapidly reduces its size; and a lesion of its innervation, impairing its function of nutrition, may have the same effect. In old age nearly all the parts of the body pass into a state of atrophy; on the other hand, the whole never rise into hypertrophy. The great bulk which some aged persons exhibit, arises from hypertrophy of the adipose tissue alone.

Our author next arrives at transformations—the conversion of one texture into another. He regards the whole as

"effected under the influence of inflammatory irritation." To this sweeping generalization we are not quite prepared to give our assent. Nevertheless, many transformations take place almost under our eyes, and can be seen to depend on inflammatory action. Thus when the skin is transformed into mucous membranes, it is under circumstances of irritation, and with the appearance of inflammation; when a deep seated abscess does not fill up with granulation and a fistula remains, this artificial efferent duct comes to be lined with a mucous membrane, analagous to that of the excretory vessels of certain glands,—which may be regarded as the transformation of cellular into mucous membrane. A few months since we saw an extensive adipous transformation of the gastrocnemii and other muscles of the leg, in connexion with chronic inflammation and articular ulceration of the ankle, rendering amputation necessary. The skin of the same limb was changed into a tissue nearly resembling cartilage.

Many transformations, however, are not preceded by symptoms of inflammation. Such are ossifications of the cartilages of the ribs, the valves of the heart, and the parietes of the vessels—on the other hand, bones occasionally pass into the state of cartilage, without the signs of inflammation being present. Transformation is, in fact, a lesion of nutrition and may take place with or without inflammation.

The following are the analagous transformations admitted by our author: 1. the cellular—2. the mucous—3. the cutaneous—4. the fibrous—5. the cartilaginous—6. the osseous—7. the adipous. These cannot be formed in or out of any other tissue of the body, indiscriminately. The law which governs their production, is nearly the same that presides over the softening of the tissues. The cellular may pass into the mucous, and this into the dermoid—or into the fibrous

which may then become fibro-cartilaginous, cartilaginous and osseous.

Under no other aspect does the science of general anatomy appear more attractive and useful, than when administering to the study of these transformations; the contemplation of which fills the mind with cheering anticipations of the future condition of pathological science. D.

ART. III.—*Guy's Hospital Reports.* No. viii, April, 1839. Edited by George H. Barlow, M. A. &c., and James P. Barrington, M. A. 8vo. pp. 263. London, 1839.

THE present number of this most excellent and highly practical work contains the following articles:—

On the Disorders of the Brain, connected with diseased Kidneys. By Thomas Addison, M. D.—On Perforations of the Stomach, from Poisoning and Disease. By Alfred T. Taylor.—On the Diurnal Variations of the Pulse. By William Augustus Guy, M. B., &c.—Observations on Poisoning by the Vapours of Burning Charcoal and Coals. By Golding Bird, M. D., &c.—Two cases of Poisoning by the Inhalation of Carburetted Hydrogen. By Thomas Pridgin Teale, F. L. S.—Case of Imperforate Uterus, with Remarks. By Alexander Tweedie.—On Incision in Cases of Occlusion and Rigidity of the Uterus. By Samuel Ashwell, M. D.—Observations on Fibrinous Concretions in the Heart. By Dr. Hughes, M. D., &c.—Analysis of Bones affected with Mollities Ossium. By G. O. Rees, M. D., &c.—Case of Division of the Tibia, for the Cure of Deformity occasioned by a Gun-shot Wound. By Charles Aston Key. Case of Spermatocele, or Varico-

cele, treated Excision of a portion of the Scrotum. By Bransby B. Cooper, F. R. S.—Observations on Abdominal Tumours and Intumescence: illustrated by Cases of Renal Disease. By R. Bright, M. D. F. R. S.

Our object is merely to present in a brief abstract the most interesting matter contained in the above enumerated articles.

I.—*On the Disorders of the Brain, connected with Diseased Kidneys. By Thomas Addison, M. D.*

In the first paragraph of his article, the author states the object of his communication to be:—

"First, To point out the general character and individual forms of cerebral disorder connected with interrupted function of the kidneys, from whatever cause such interrupted function may arise. Secondly, To shew, that, in recent as well as chronic disease of the kidney, the cerebral disorder is not unfrequently the most prominent, and occasionally the only obvious symptom present. And, Thirdly, To establish a means of diagnosis, in such obscure or in unsuspected cases, upon the peculiar character of the cerebral affection."

After stating the general character of cerebral disorder connected with disease of the kidneys, to be "marked by a pale face, a quiet pulse, a contracted or undilated and obedient pupil, and the absence of paralysis"—he enumerates the five following, as the individual forms:

"1. A more or less sudden attack of *quiet stupor;* which may be temporary and repeated; or permanent, ending in death.

"2. A sudden attack of a *peculiar modification of coma and stertor;* which may be temporary, or end in death.

"3. A sudden attack of *convulsions;* which may be temporary, or terminate in death.

"4. *A combination of the two latter;* consisting of a sudden attack of coma and stertor, accompanied by constant or intermitting convulsions.

"5. A state of *dullness of intellect, sluggishness of manner,* and *drowsiness,* often preceded by *giddiness, dimness of sight,* and *pain in the head;* proceeding either to *coma* alone, or to *coma accompanied by convulsions;* the coma presenting the peculiar character already alluded to.

"With respect to the first mentioned form of cerebral disorder connected with renal disease, that of quiet stupor, it is, in its most exquisite form, probably the least frequently met with; the face is pale, the pulse quiet, the pupil natural, or at least obedient to light; and although the patient may lie almost completely motionless, there is no paralysis; for, on attentively watching him for some time, he will be observed slightly to move all the extremities. By agitating him, and speaking loudly, he may sometimes be partially roused for a moment, but quickly relapses into stupor, as before; or it may not be possible to rouse him at all. There is little or no labour of respiration, no stertor, and no convulsions. Slight degrees of it, occasionally precede and pass into the next or second form.

"This second form of cerebral affection is that of a sudden attack of coma with stertor, or, in other words, apoplexy: it is, nevertheless, different from ordinary apoplexy: it is the serous apoplexy of authors, and presents the usual general characters of cerebral affection depending upon renal disease; for the face, instead of being flushed, is, in almost every instance, remarkably pale; the pulse, though sometimes small, and more rarely full, is remarkably quiet, or almost natural; the pupil, also, although occasionally dilated or contracted, is often remarkably natural in size, and obedient to light; and there is no paralysis. When the labour of respiration is very great, the general character is apt to be modified by an accelerated pulse, and occasionally by a slight flush of the countenance. The coma is for the most part complete, so that the patient cannot be roused to intelligence for a single moment. The stertor is very peculiar, and in a great measure characteristic of this form of cerebral affection connected with renal disease; it has not, by any means, in general, the deep, rough, guttural, or nasal sound of ordinary apoplexy: it is sometimes slightly of this kind; but much more commonly the stertor presents more of a hissing character, as if produced by the the air, both in inspiration and in expiration, striking against the hard palate or even against the lips of the patient, rather than against the velum and throat, as in ordinary apoplectic stertor: the act of respiration, too, is usually, from the first, much more hurried than is observed in the coma of ordinary

apoplexy. The peculiar stertor coupled with the pale face has, in more instances than one, enabled me to pronounce with confidence the disease to be renal, without asking a single question, and in cases, too, in whcih no renal disease whatever had for a moment been suspected.

"The third form of cerebral disorder connected with renal disease is that of a sudden attack of convulsions. In this case, also, the countenance is, for the most part, remarkably pale, although, occasionally, slightly flushed at intervals: the pupil is often but little affected: in slight attacks of the kind, the pulse is sometimes singularly quiet; but when the convulsions are severe, and especially when there is such a degree of coma as to be attended with stertor, the heart often sympathizes, and the pulse becomes rapid, irregular, and jerking. This form of cerebral affection often passes into the fourth variety; or the cerebral affection shall take on the form of the fourth variety from the commencement: in the latter case, we have merely a combination of the second and third varieties—the coma, hurried breathing, stertor, and convulsions being so blended together, as often to have led to a dispute, whether the affection ought to be designated apoplexy or epilepsy. From what has been already stated, it may in general be very easily recognized as one of the common forms of cerebral disorder connected with renal disease.

"The fifth variety is that in which the cerebral disorder makes its approach in a more gradual and insidious manner, usually commencing with dulness of intellect, sluggishness of manner, and drowsiness, gradually proceeding to coma, and more or less stertor, with or without convulsions; these states being, at the same time, distinguished by the general indications already pointed out. This form of cerebral disorder appears to be that which most commonly supervenes in the progress of the morbid change of kidney described by Dr. Bright; and is very frequently preceded by giddiness, dimness of sight, and pain in the head."

After having thus given the symptoms and characteristics of cerebral disorder connected with renal disease, the Doctor devotes the remainder of his article to the consideration of a question essentially connected with and naturally growing out of the subject,—viz: "Whether there really exists any discoverable relation between the character of the renal

affection and that of the brain—whether the form, permanence and violence of the cerebral disorder bear any relation whatever to the activity, duration, and extent of the renal disease." Although he confesses himself unable to come to any definite and decided conclusion upon the subject, yet he takes the affirmative of the question with some confidence of its truth, and urges in support of it—" a tendency to a state of quiet stupor," which varies from " sluggishness of intellect, to complete insensibility to surrounding objects," and which is observable in the milder and more transient affections of the kidneys. In connection with this, he gives a case in which these cerebral symptoms were strongly marked, but in which there were none of the ordinary symptoms of nephritis. Upon a post mortem examination, " the cortical parts of the kidneys were found highly injected, of a deep red, or almost chocolate color, and somewhat softened in its texture." He again urges the peculiar convulsions, already described, sometimes proving fatal; from which in other cases the patient recovers, and which he has observed "most frequently in renal dropsy, subsequent to scarlatina," —" and in that form of renal dropsy," which proceeds from cold, and is commonly termed idiopathic. Lastly, he urges the cerebral affection, and " peculiar liability to be suddenly seized with the most alarming and most fatal of all the forms of cerebral disorder occurring in connection with renal disease—profound coma and stertor, with or without convulsions," which are *sometimes* observed in those cases of granular degeneration of the kidneys, as described by Dr. Bright. In regard to this last, he confesses that many cases occur unattended by any cerebral symptoms. All of the facts adduced by the author may be coincidences, or they may not: and they require additional observation to establish their necessary connection.

2.—*Perforations of the Stomach from Disease and Poisoning. By Alfred S. Taylor.*

This paper of Mr. Taylor's relates to the subject as connected with some questions in legal medicine, and his object is to point out the means of diagnosis in cases of death from, or attended with perforations of the stomach, in which poisoning had been or may be suspected.

In treating his subject, (which he does in a very perspicuous and satisfactory manner,) he considers separately the different causes of perforation—1st. perforation from poisons. 2nd. perforation from morbid causes. 3rd. perforation by solution.

In regard to the first he says: "Poisons are capable of inducing perforation of the stomach in two ways: 1. by corrosion—2. by leading to ulceration, and the destruction of the parietes in a circumscribed space by that process." Perforation by corrosion is decidedly the most common, in this division of its causes: and is effected by the "concentrated mineral acids and alkalies, corrosive sublimate, nitrate of silver, and a few others"—the action of which is "purely chemical." The corrosive poisons when taken, immediately produce very severe symptoms, (which the author does not give,) such as those of the most violent gastritis; with excruciating pain in the stomach, severe burning in the throat, &c., most commonly terminating speedily in death. Taking sulphuric acid as an example, (as it is the one most commonly used,) the above symptoms are produced in a very aggravated form; and the post-mortem appearances presented, will be extensive corrosion of the mouth, fauces, and œsophagus; and a perforation of the stomach, sometimes of considerable size, having "rough, irregular edges, often softened and pul-

py." The mucous membrane for some space around the perforation presents a dark brown or black color, of a "sooty appearance." The black matter being removed from the surface, traces of inflammation will be found, provided the individual has lived long enough for that process to have been established. Besides these, the acid passes through the perforation which it has made in the stomach, and extends its ravages to the contiguous viscera. Its presence may be detected in the fluids contained in the stomach, or the cavity of the peritoneum, or in the corroded mucous membrane. Perforation may be produced by nitric acid also; but not so many cases of it have been observed, as it is not so commonly employed as the sulphuric. In those however which have occurred, the edge of the aperture is "generally tinged of a yellow color; or if bile be present in the contents of the stomach, then the mucous coat may have a greenish hue." Perforation has sometimes, but rarely, been produced by oxalic acid, some of the alkalies, particularly potassa, bichloride of mercury, nitrate of silver, and sulphate of copper.

In regard to perforation from ulceration and sloughing as the immediate cause, it is produced by what the author calls "the irritant poisons," which indeed is a generic division of Christison, including the corrosive poisons above spoken of. The author regards perforation from this cause as extremely rare, but that it has been produced probably two or three times by arsenic, and possibly one or two other substances. The perforation when it does occur, very much resembles that from previous disease, and requires the concurrence of a number of collateral circumstances to establish the fact, that it has been produced by poisoning.

With respect to the second class of causes of perforation, viz: "morbid causes," he says it may be a result—"1. of sim-

ple ulceration, sometimes of an acute, but more frequently of a chronic character. 2. of scirrhous ulceration." The first is intended to designate an aperture in which there is an ulcer of some size, of the mucous coat, having well defined but not elevated edges—an ulceration of less dimensions of the muscular coat, and one of still less of the peritoneal coat; thus forming a funnel-shaped perforation; the apex of the funnel being at the peritoneal surface. The second is intended to designate one of the same kind, save that the border of the ulcer and coats of the stomach contiguous to it are elevated, and so hard as to seem "almost cartilaginous."

A person laboring under the first form of ulceration, will suffer from some slight dyspeptic symptoms, or some trivial derangement of the stomach which attracts but little attention, when suddenly, (most commonly after eating,) they will be attacked with vomiting and severe and even excrutiating pain in some part of the abdomen, which continues despite all the means which may be employed, and the patient succumbs in, generally, from eighteen to thirty-six hours. Vomiting though commonly an attendant, is sometimes absent; there is no diarrhœa, the bowels being in general obstinately constipated; and pain between the shoulders has been so frequently observed in these cases as, in the author's estimation, to merit attention, as being probably something more than a mere coincidence. According to the author's observation and the cases which he has introduced into his article, this disease "seems to attack frequently young females, from 18 to 23 years of age, generally unmarried," though it is by no means exclusively confined to them. The post-mortem appearances present, in addition to the ulceration above described, and which is commonly from half an inch to an inch in diameter, and "almost constantly situated in or

near the lesser curvature, between the cardia and pylorus;" "all the marks of severe peritonitis; effusion of serum with coagulable lymph; agglutination of the viscera, and extravasation of the contents of the stomach."

The symptoms of scirrhous ulceration differ from those of the simple form, in there having been for a long time gastric symptoms, such as irritation, &c., together with constitutional disturbance. But when the perforation takes place, and the fatal attack of peritonitis comes on, the symptoms are the same as those above detailed; and the post-mortem appearances are the same, save in the character of the ulceration, which has been distinguised above. And in addition to the characteristics of the scirrhous ulcer already given, we may add that the coats of the stomach are thinned off from within outwards, the peritoneal being reduced to a sharp smooth edge, without any appearance of laceration, as if it had been effected by gradual absorption.

By "perforation by solution" is meant a large opening found in the stomach, generally at its greater extremity, and occupying a large portion of the fundus. "It is large and irregular; the edges are thin, ragged, commonly much softened for a considerable space around, and present that fringed appearance which the stomach might be conceived to acquire by the scraping of its parietes with a blunt knife. "Most commonly there is no vascularity nor trace of any other lesion of the stomach; and so also there is no trace of peritoneal inflammation, when extravasation of the contents of the stomach has taken place, which however does not always occur. 'Tis true that vascularity of the mucous membrane of the stomach may sometimes be present, but it is to be considered as incidental, and depending upon some other cause. In regard to symptoms the author says: "this singular change is either not

indicated by any symptoms during life, or they are of so slight a kind as to lead to no suspicion of the mischief which is going on." The author devotes several pages to the description of cases which he has collected—to the consideration of the cause of the perforation, whether it be the result of disease, and takes place during life, or whether the change is purely post-mortem, effected by the solvent power of the gastric secretion on dead animal matter—and "whether the gastric secretion acts on the stomach by its vital or chemical properties." But we must be content to give only the "conclusions" to which he considers himself justified in coming. They are the following:

"1. That perforations of the stomach, from solution, are very rare in the human subject.

2. That they may occur in healthy and diseased states of the body.

3. That the perforation takes place after death; and depends on the action of the gastric secretion, which, in the opinion of some, is facilitated by a diseased state of the parietes of the stomach. But that the secretion is the chief, if not the sole cause, seems probable, from the fact, that the liver, spleen and diaphragm have also been found softened, the latter even perforated where lying near the aperture in the stomach. We must then imagine, either that these accidentally contiguous parts partake of the same disease as the stomach, or that disease of that organ is not necessary for its coats to become destroyed by the secretion.

4. That the secretion cannot be the healthy gastric-juice, but some altered state of that liquid. This is rendered probable by the facts—1. If it were the ordinary secretion, perforation would be much more common in healthy persons, dying suddenly, soon after a meal. 2. It would not be met with in diseased subjects, or those laboring under disease of the stomach.

5. That the exact nature of the liquid producing the change, and the circumstances to which it owes its solvent power, are unknown."

We come next to speak of the means of diagnosis, in all cases of perforation of the stomach, in reference to the medico-legal questions growing out of them. From what is said upon the subject we may glean the following:

1. That it is hardly possible to confound perforation from either "simple" or "scirrhous ulceration" with that produced by the corrosive poisons. For even in the absence of all general evidence in regard to some such subtance having been taken, a simple inspection of the mouth, faucus, œsophagus, the perforation itself, and perhaps the corrosion of the surrounding viscera, together with an examination of the matters vomited, "consisting of shreds of membrane and altered blood," mixed with sulphuric acid or whatever may have been taken—and the contents of the stomach and cavity of the peritoneum—will settle the question almost beyond the possibility of doubt.

2. That it is principally in distinguishing perforation by disease, from that produced by the "irritant poisons" the difficulty consists. In order to do this with any degree of certainty, it is necessary to take a good many circumstances into consideration.

1. Perforation by disease is comparatively frequent, and moreover seems most apt to attack young females, while that by arsenic, (as an example of the irritant poisons, and the one most commonly employed,) is very rare.

2. In the former, the symptoms do not generally make their appearance for several hours after eating, though occasionally in much less time; whereas those from arsenic almost uniformly come on in about half an hour after the substance containing it has been taken.

3. In cases of the former, the pain in the abdomen comes

on suddenly, is intensely severe, and may be felt in any part of the abdomen; while that from arsenic is one of a burning character, comes on gradually, increases slowly, and is confined to the region of the stomach.

4. "In perforation, vomiting, if it exists, is commonly slight; and it is chiefly confined to what is swallowed. There is no purging; the bowels are generally constipated. In arsenical poisoning, the vomiting is usually severe, and diarrhœa is seldom wanting."

5. In the former death takes place in from eighteen to thirty-six hours, and very often within twenty-four; whereas in the only case given by the author in which perforation was produced by arsenic, the individual lived four days; and of the great number of reported cases in which death resulted from arsenic in twenty-four hours, perforation was not found in one. Indeed it can hardly be supposed that arsenic could effect perforation in so short a space, as it has to accomplish it through the medium of inflammation and ulceration.

6. "In perforation, peritonitis is the sole cause of death. In arsenical poisoning, the fatal result takes place under the peculiar symptoms produced by the poison."

7. In the former, the marks of severe peritoneal inflammation will be found; while in perforation from arsenic, these may also exist, but not necessarily, for the individual may die so soon after perforation has taken place, (from the other effects of the poison,) that there has not been sufficient time for the peritoneal inflammation to set up. Even though this should be found, there will also be the effects of the poison upon the mucous coat.

8. In perforation from disease, there is not necessarily any inflammation of the mucous membrane of the stomach and small bowels, although it may sometimes be present; while in

that from arsenic, the inflammation of the stomach and duodenum, is, generally, considerable, and not unfrequently is also found in the fauces, œsophagus, and rectum.

9. In perforation from disease, no poison will be found, while in that from arsenic, we may expect to find it, either in the matters vomited, in the contents of the stomach, or in the substance of the viscera.

And lastly, if several persons have partaken of the same food, and but one of them is taken ill shortly after, it is strong presumptive evidence against the supposition of poisoning; while, if they are all taken suddenly ill, the reverse obtains.

In regard to perforation by solution; if any thing be known of the symptoms under which the patient labored, there will be but little difficulty in making out the diagnosis, for if the perforation be cadaveric, the disease by which death has been produced will have been characterized by its symptoms, whereas if it have been produced by poisoning, its very evident symptoms will have been present. In case however that none of these facts be attainable, there will be some danger of confounding it with perforation by the "corrosive poisons." The aperture itself simulates, in no inconsiderable degree, that produced by sulphuric acid, for instance; while the contiguous viscera have the appearance of having been acted on by some corrosive substance. But still a diagnosis may be made out with some certainty; by inspecting the condition of the fauces, œsophagus—and by applying chemical tests to the contents of the stomach, and cavity of the peritoneum, together with the coats of the stomach. And if the mucous membrane of the stomach and bowels, together with the peritoneum, evince marks of inflammation, it will greatly heighten the probability of poisoning, provided other circumstances concur to the same point.

The last ten pages of his paper Mr. Taylor devotes to the consideration of the following medico-legal propositions:

"1.—A person may have died from perforation of the stomach through disease and not from poison.
"2. A person laboring under the disease, may be the subject of poison.
"3.—A person laboring under the disease, may have received blows or injuries on the abdomen, in which case it may be necessary to state, whether the perforation did or did not result from the violence used.
"4.—A perforation of the stomach from post-mortem changes may be mistaken for perforation from poison."

In connection with the first, he gives a very interesting case, in which the circumstances of a moral nature—the symptoms under which the patient labored—and some of the post-mortem appearances, were very strongly in favor of the supposition of poisoning, but upon applying the diagnostic tests, already detailed, for perforation by ulceration, the case was made out so clearly that it was not even deemed necessary to have a coroner's inquest over the body.

Two questions very naturally grow out of the second proposition.—"1. Whether the perforation, or the diseased state of the stomach leading to it, was due to poison. 2. Whether the disease or poison was the cause of death."—"The first question will be answered by considering the nature of the substance. Thus, knowing that the corrosives and irritants alone are liable to cause perforation of the stomach, the discovery of a narcotic poison will shew that the disease and the substance taken, could not have had any connection with each other. So again among the irritants, there are some, perhaps the greater number, not likely to be followed by perforation of the stomach."—The second may be determined, by ascertaining the symptoms under which the patient labored; whether those of ulceration, or of poisoning and by the ap-

pearances found upon dissection. See the characteristics of perforation by ulceration, and those by poisoning, already detailed.

With respect to the third proposition, any case of the kind may be determined, with some degree of certainty, by considering the nature of the violence inflicted, and the character of the perforation. Thus, if it proceed from the disease alone, a perforation peculiar to ulceration will be found; whereas, if from the violence, some laceration might be expected.

The fourth proposition presents a case which may possibly happen by the concurrence of extraordinary circumstances; but must necessarily be very rare. A case however may occur, in which the person may labor under the symptoms of irritant poisoning, and perforation be caused after death by the gastric secretion. In such a case, it will be necessary to take into consideration the general circumstances—to ascertain minutely the character of the symptoms—and attend to the post-mortem appearances, as already directed in such cases.

We have thus given an abstract of this paper of Mr. Taylor's, and trust that we will not be considered to have devoted more space to it, than was due to its merits.

3.—*On the diurnal variations of the Pulse. By William Augustus Guy, M. B. &c.*

In former numbers of these reports, Dr. Guy gave the results of his experiments on the effect produced by change of posture on the pulse of healthy males—and on the effect produced by the same cause, as modified by age and sex. The object of his paper now before us, besides that set forth by its title is to show the susceptibility of the pulse to effects by different agents, at different periods of the day.

The experiments are reported fully, and with minuteness; but as it is only desirable to show the general effects, it will suffice to notice the mean results.

Twenty observations made on himself, upon rising in the morning, and the same number, upon going to bed, gave as an average, sixty-four beats in the morning, and fifty-four at night. There was however between the highest number in the morning and the lowest at night, a difference of eighteen beats. "This remarkable diminution towards night" he observes, "took place in spite of the various excitements produced by food, study, or exercise, during a space of fifteen or sixteen hours."

His next series of observations was designed to show the state of the pulse throughout the entire day, in which it was counted every quarter of an hour, from nine and a half in the morning to twelve and a quarter at night: during which time he was engaged in a study, which produced no excitement of mind and required no change of position. From the results, it appears that there was a sudden increase in the number of beats, at a quarter to ten, from sixty to seventy-nine, produced by breakfast. That from this time there was a gradual diminution, until it got as low as fifty-two at quarter past four—that it remained at this, one hour and a quarter, when it suddenly increased again to seventy; which increase was produced by dinner. From this time there was an irregular diminution, falling and then rising again two or three beats, when, at a quarter to twelve, it was again at fifty-two. At twelve, and a quarter past twelve, it was at fifty-six and fifty-five.

Another single series of observations, from nine A. M., until two P. M., showed that the diminution towards evening

is not constant; and also, that there may be considerable fluctuation in the morning as well as in the evening.

Another series designed to ascertain the effect of fasting upon the pulse, and which was protracted during a space of thirteen hours, showed a diminution of six beats, with "occasional fluctuations."

The next observations were made to institute a more exact comparison between the state of the pulse in the morning and evening, by examining it in the morning and evening under precisely the same circumstances. A set of observations consisting of eleven series was first made, to try the effect of continued rest on the morning and evening pulse. A second set, consisting of fourteen series was made, to try the effect of food on the same.

In regard to the first, the plan adopted was to ascertain its frequency before breakfast, as a standard of comparison throughout the day. Breakfast was then taken; and waiting until the pulse had subsided, from the increased frequency produced by the meal, to what it was before breakfast, it was counted every quarter of an hour, for a period varying in different series, from half an hour to two hours; and the mean frequency of the whole was noted. The minimum frequency was also noted. Remaining after dinner then in a state of rest, until the pulse had acquired the same frequency which it had before breakfast, (which was generally about eight or nine in the evening,) tea was taken, consisting of exactly the same with the breakfast, and the observations made as in the morning. The results also were noted as before. This was repeated eleven days, and a table constructed, containing the results of each day. The following is given by Dr. Guy, as "the mean results of the series given in the table."

	max.	min.	mean
"Frequency of the pulse before the observations . . .	66	60	62.36

	Morning: max.	Morning: min.	Morning: mean	Evening: max.	Evening: min.	Evening: mean
Average frequency of the several series of observations	—	—	—	—	—	—
	64.5	57.33	61.28	63	56	58.71
Least number of beats in any series of observations	62	56	59.18	62	54	56.54
Differ. between the original frequency and least number	6	0	3.23	8	4	5.82

In the second set of observations, viz: those to show the effect of food, precisely the same plan was adopted as in the above, and the fourteen series of observations give the following mean results:

	max.	min.	mean
"Frequency before the meal	66	60	62.08

	Morning: max.	Morning: min.	Morning: mean	Evening: max.	Evening: min.	Evening: mean
Frequency after meal . . .	81	70	75	74	60	69.15
Increase	21	10	12.92	12	0	7.15
Duration of effect in hours,	3.75	1	2.02	1.75	0	.09
Diminution per hour . . .	12	4	6.4	40	6	7.8
"Exceptions to the rule of progressive diminution	29.21 per cent.			13.33 per cent.		

The following are the average results of six experiments, in which the pulse before the meal was sixty.

	Morning: max.	Morning: min.	Morning: mean	Evening: max.	Evening: min.	Evening: mean
Frequency after the meal, . .	81	70	75	72	60	63
Increase	21	10	15	12	0	8
Duration of effect in hours,	3.75	2	2.75	1.75	0	87
Diminution per hour . . .	6.9	4	5.45	20	6.8	9.02
Exceptions to the rule of progressive diminution	26.47 per cent.			11.76 per cent.		

After noticing the uniformity of the results, the author remarks that, "by far the most remarkable fact established by these observations, is, that the same food which in the morning increases the frequency of the pulse from five to twelve beats, and keeps it raised above its natural number from one to two hours, may in the evening produce no effect whatever." He

*That is to say, the instances in which the pulse, instead of being less frequent, was more frequent than in the preceding observation, were in the morning in the proportion of 29 per cent., and in the evening of 13 per cent.

refers to his table of details, which our space does not permit us to insert.

Having given the results of his observations much more minutely and in extenso than we have noticed, he proposes the following as facts established by them:

"1. The pulse of a healthy adult male in a state of rest, unexcited either by food or exercise, is most frequent in the morning, and gradually diminishes as the the day advances.

2. The pulse diminishes in frequency more rapidly in the evening than in the morning.

3. The diminution of the frequency of the pulse is more regular and progressive in the evening than in the morning.

4. The effect of food is greater and more lasting in the morning than in the evening; and, in some instances, the same food which in the morning produces an effect considerable both in amount and in duration, has no effect whatever in the evening."

The theory which Dr. Guy proposes upon the subject, and in support of which he brings forward some additional facts and arguments, is that:

"Early in the morning, after we have been completely refreshed by sleep, the strength of the body is at its maximum: all its functions are performed with vigour; and all the causes of excitement produce their greatest effect. But activity of body or of mind, and the application of stimuli of different kinds, produce debility, which goes on increasing as the day advances. So long as the body continues in perfect health, this increasing debility produces a sedative effect on the action of the heart; the frequency of the pulse is diminished; and it becomes less and less affected by the application of stimuli. Sleep restores strength and vigour to the body, and again confers upon it that excitability of which fatigue had deprived it. But fatigue, or the want of rest, may give rise to a state of debility which is incompatible with health; and which is accompanied by increased frequency of pulse, and increased susceptibility of the action of stimuli. It is, of course, quite impossible to draw the line between that debility which is consistent with health, and that which in itself may be regarded as a departure from it— between that degree of exhaus-

tion which is attended by torpor of the functions, and that which is accompanied by increased excitability: but it may be stated, as a general rule, that debility without disease is productive of an infrequent pulse."

Lastly, he suggests as a practical application, that in cases where we wish to afford nourishment with as little excitement as possible, we should give the food in the evening. And that where it is desirable to produce as great an effect as possible, by the exhibition of remedies, we should choose the morning.

4.—*Observations on Poisoning, by the Vapours of Burning Charcoal and Coals. By Golding Bird, M. D., &c.*

Passing over several pages of this paper of Dr. Bird's in which he institutes the question of—what is the poisonous ingredient in the vapours of burning charcoal, &c.—and in reference to which, from the facts and experiments adduced by him, he concludes that it is carbonic acid in a large majority of cases, but that in some few, some other unknown substance is probably the noxious agent,—we shall at once enter upon a notice of his "physiological and pathological effects resulting from the inhalation of charcoal vapour."

The "symptoms" produced by carbonic acid are well marked, but not entirely characteristic, as they simulate very nearly the premonitory symptoms of apoplexy. Under this head however, it is not desirable to condense the page in which the author portrays them, and we shall quote him at some length:

"The person exposed experiences an intense, penetrating, and throbbing headache, accompanied by a sense of weight and heat, especially about the occipital region; strong pulsation in and a sense of tightness across the temples; vertigo; increased action of the heart, often accompanied by violent

palpitations; confusion of ideas, and partial failure of memory, accompanied, in many instances, by a disposition to nausea and hysteric sobbing. If the individual who has been thus exposed be now removed from the vitiated atmosphere, and placed in a current of cool air, especially in the recumbent position, with the application of hot water bottles to his feet, if they be (as under these circumstances they usually become) cold, these symptoms gradually vanish, and in a few hours the patient recovers. But if the person be not so fortunate, and remain exposed to the poisoned atmosphere, a buzzing noise in the ears succeeds, followed or accompanied by partial or total loss of vision; and an undefined, vague, feeling of intense horror or dread, which is rapidly succeeded by an irresistible disposition to somnolency or syncope. Subsequently, and in a space of time varying probably with the state of vitiation of the atmostphere or temperament of the individual, all power of volition disappears, the pulse and palpitation of the heart, which were previously above 100 or 200, diminish in frequency, falling to 40 or 50; respiration becomes slow and laborious; the surface universally cold, and often livid; the lips becoming blue or violet; the eyes retaining, in most cases, their lustre: gradually, these symptoms increase in intensity, with frequently the accession of tetanic convulsions, and in a few instances raging delirium, white or bloody foam appears before the mouth and nostrils, vomiting supervenes, and the sufferer expires in the act; occasionally, however, breathing his last without its occurrence; in which case, the tongue is found protruded, or clenched firmly between the teeth;—the countenance always retaining an expression of deep and placid calm, the victim being generally found lying on the fatal apartment in a calm and sleeplike attitude, which even the vomiting, that often occurs in the last moments of existence, had been as ineffectual in disturbing, as it had been impotent in arousing the sufferer to a sense of his perilous situation. These symptoms are, with a single exception, recognized by all toxicological writers as constant. The exception to which I allude, is, vomiting—a certainly not very unfrequent accompaniment of death by charcoal fumes, although I am aware it has been lately denied as almost impossible to occur. It is for us, however, to regard facts that have occurred, and therefore likely to happen again; rather than assertions of what ought, on theoretical grounds, to take place."

Having detailed the symptoms, the author devotes some space to an enumeration of the "appearances presented by

the corpse"—and the "appearances on dissection." In regard to the former, he gives a table, containing the appearances observed in a number of cases: but the following extract will present the principal ones, and those most uniformly found:

"The body is almost invariably found sprinkled with livid spots of a blueish or reddish brown, passing into violet: these are most numerous in the most depending parts, as about the back and loins; frequently occurring on the extremities, especially on the fore-arm: the limbs are in some cases extremely flexible, in others as rigid; so that no general law will apply to these circumstances: the fingers are often irregularly bent, sometimes stiff and extended; the arms being sometimes thrown across the chest, especially if tentanic spasms have preceded death. The animal heat has been stated by many authors—as Henke, Jarger, Orfila, and Beck—to remain for a preternatural length of time; whilst numerous cases are on record in which the bodies cooled as rapidly as under ordinary circumstances. The same difference of opinion, among authorities of equal weight, exist on the rapid or slow development of the appearances of decomposition. The tongue is found projecting, and often firmly clenched between the teeth; unless vomiting preceded death, in which case the tongue is usually drawn in and concealed. The mouth is often covered with white or bloody foam; the face in some cases is red and bloated, in others pale and unswollen. The eyes generally retain their vivacious and lustrous aspect, rarely being dull; sometimes they are injected: the pupils have, in almost every recorded case, been found dilated;—the whole features presenting an appearance of calm repose; even slight distortion being extremely unfrequent. On examining the interior of the nostrils, they have been, in many cases, found lined with a black fuliginous deposit. The abdomen is generally found distended with air."

"*Appearances on Dissection.*"

Under this head also, the author gives a table, containg the pathological appearances found in 18 cases. The most common are—

Head—Its coverings injected with blood; internally, the

membranes and sinuses "invariably turgid with blood," and serous effusion beneath the arachnoid. Cerebral mass—its surface injected, presents bloody points on being cut, and occasionally softened. The lateral ventricles contain serous effusion, sometimes very abundant. Surface of cerebellum turgid, and serous effusion at the base. Extravasation of blood sometimes takes place from ruptured vessels; and the author gives one case in which there was universal effusion between the arachnoid and pia-mater, dipping down between the convolutions. Blood in the brain sometimes black, at others florid.

Chest—Frequent effusion of bloody serum into the pleura; lungs sometimes expanded and full of blood and air, at others collapsed—vary in appearance from a perfectly natural one, to redness with black spots, and even to a blackish violet color; vessels sometimes empty, at others turgid; mucous membrane of air passages, generally reddish and frothy, sometimes pale, with florid or black blood.

Heart—frequently effusion of bloody serum into the pericardium, both ventricles sometimes empty, the right commonly filled; the left usually empty, but occasionally both are filled with florid or black blood.

Abdomen—Most commonly all the viscera are healthy; sometimes the mucous membrane of the stomach and duodenum has a reddish tint, but which is probably produced by a recent digestion; serous effusion into the peritoneum not unfrequent; arteries empty, veins turgid with dark blood.

The author next raises the question whether carbonic acid acts simply by excluding atmospheric air, or as a specific poison. From the symptoms, vertigo, headache, loss of vision, somnolency, &c., which make their appearance very soon after exposure to the gas, and before any pulmonary symp-

toms occur, and from some experiments, in which a gentleman immersed himself (and afterwards some birds) in this gas, and soon experienced its pecular effects, notwithstanding he breathed pure air by means of a tube; together also with the facts that animals exposed to a mixture of carbonic acid and oxygen expire suddenly, notwithstanding that the oxygen is in as large a proportion as it exists in the atmosphere; from all these, we say, together with other facts already detailed under different heads, the author conceives himself justified in making the following deductions:

"1. That carbonic acid gas, sufficiently diluted with air (as in charcoal-vapor) does not act fatally, by closing the glottis spasmodically, or by excluding oxygen, but as a specific poison.

2. That such an atmosphere will produce death; although it may contain a sufficient amount of oxygen to support life *per se*, and to allow the arterialization of the blood to proceed: on which account no dependence can be placed on the dark or florid color of the blood, as arguments for or against poisoning by carbonic acid gas.

3. That such diluted carbonic acid acts most probably on the nervous system, primarily; and, secondarily, by no means essentially on the circulating fluid.

4. That the death of persons inhaling an atmosphere vitiated by carbonic acid is produced by the accession of apoplexy, often attended by serous effusion into the ventricles, or on the surface of the brain; and occasionally even by extravasation of blood from some cerebral vessel.

5. That no dependence can be placed on the bloated and red, or pale and contracted features; on the liquidity or coagulated state of the blood; on the injection or paleness of the mucous membrane of the intestinal tubes or air-pipes; or on the flexibility or rigidity of the limbs; as positive arguments for or against the action of carbonic acid as a cause of death, in individual cases, falling under medico-legal investigation."

5.—*Two cases of Poisoning by the Inhalation of Carburetted Hydrogen. By Thos. P. Teale, F. L. S.* (*Communicated by C. Aeton Key, Esq.*)

This article details the circumstances connected with two cases of fatal poisoning by carburetted hydrogen gas, which occurred in Leeds, England, December, 1838. The two individuals, an old woman sixty-nine years of age, corpulent and subject to attacks of paralysis, and another female aged twenty-two years, in good health, occupying two small rooms on the ground floor of Potter's Almshouse, were, during the day previous to the night on which they suffered its fatal effects, annoyed by the smell of gas, which escaped from a rupture in a pipe that passed in a few feet of their room. Between the rupture in the pipe and a sink in the floor of a pantry which opened into their sleeping room, there was a free communication for the gas by means of loose earth and rubbish that intervened; and in the evening an explosion of the gas took place in the pantry from a lighted candle being taken into it. After the explosion, by which probably the greater portion of the gas then in the room was consumed, no smell of it was perceived, and apprehending no further danger, the two individuals spoken of retired to the same bed about ten o'clock. About nine the next morning, the neighbors becoming alarmed at their rising so unusually late, broke into the room, immediately perceived a smell of coal gas, the old woman was found lying on her side, lifeless, cold, and the muscles rigid; the young woman was lying upon her face, was dead, but the trunk and extremities were still quite warm and flexible. The bed clothes were but little displaced, and there was no other indication of any struggling by either of them.

Morbid appearances presented by an examination of the body of the young woman about ten hours after death:

External surface generally very pale, save some mottled florid discolorations on the neck and back; features not distorted; pupils moderately dilated; muscles rigid; fingers flexed.

Head—Scalp contained some, but was not loaded with blood; interior membranes, their vessels and sinuses in a normal condition; substance of the brain firm, contained a "very fluid and rather florid blood" which oozed at numerous points when cut into; lateral ventricles contained about an ounce and a half of transparent serum. A small quantity of serum was collected in the spinal canal, but there was no observable lesion in any of its contents.

Chest—The muscles exposed in opening this cavity, together also with those of the abdomen, exhibited a very light and florid appearance. The tissues generally of this cavity and the abdomen were pallid, and exhibited a "remarkable absence of turgidity of the veins.

Heart—Its right side contained a small quantity of fluid blood, not so dark as venous blood generally; left ventricle firmly contracted and empty.

Lungs—Substance generally much less crepitant than natural. Mucous lining red.

Abdomen—Mucous membrane of stomach, "thick, opaque, and easily detached, and presented reddened streaks upon its folds—mucous membrane of the small intestines, generally red, but presented patches in which the redness was most intense. This vascularity was most considerable in the jejunum, next in the duodenum, and least in the ileum. Throughout the same surface also, were "multitudes of extremely minute ecchymoses." Liver—fluid blood oozed freely from

it on being cut. Gall-bladder distended with a thin watery fluid. "The uterus contained a little sanguineous mucus, and its internal membrane was red." (We will here remark that the catamenial discharge had ceased about two days before her death.) "The left ovary contained a body about the size of a pea, having the appearance of clotted blood. The urinary bladder was flaccid, and contained about half an ounce of opaque white fluid: its mucous membrane was white."

Morbid appearances presented by examination of the old woman.

External—Same as in the former case.

Head—Its external the same as in the other. Interior—Sinuses of the dura-mater, contained a moderate quantity of very fluid blood. Considerable sub-arachnoid serous effusion, which was more abundant upon the upper surface of the hemispheres—and somewhat turbid in same places. It was so considerable as to penetrate the fissures between the convolutions, separating and giving them the appearance of being atrophied. The arachnoid and pia-mater were easily detached from the surface of the brain. The substance of the brain contained fluid blood of a florid hue, which escaped at numerous points of an incised surface. Lateral ventricles empty—small, and exhibited numerous very firm adhesions.

Chest.—Generally the same as in the former case. Heart—right side contained rather more, but not turgid with blood, of the same kind, together with a small fibrinous concretion—left side not so firmly contracted, and contained a quantity of the same partially changed blood, together with a small fibrinous concretion. Lungs—more crepitant than in former case, presented the mottled appearance of age, with the intervals too red—considerable blood and frothy fluid oozed upon incision—and the mucous lining was injected.

Abdomen.—Stomach normal—small intestines distended with gas that "burnt with a blue flame"—their mucous membrane presented the same vascularity and ecchymosed appearance as in the former case. "Liver, large and granular, fluid blood escaping freely from its cut surfaces." All the other viscera healthy.

A portion of the gas from the small intestines was analyzed, and found to contain:

"Carbonic acid, ...	36
Carburetted hydrogen, ...	45
Nitrogen, ...	19
	100

It is no unusual thing however to find combustible gas in the intestines of persons who die under a variety of circumstances.

In concluding, the author expresses in plain terms, his opinion that the gas, if respired unmixed with air, would speedily prove fatal, by producing asphyxia; and seems inclined to believe that, in the two cases just detailed, it acted somewhat in the same way; at any rate not as a poison. In this opinion he is supported by experiments which have been made upon animals with this gas, and by the notorious fact that colliers frequently breathe for a considerable time, an atmosphere strongly impregnated with it, without suffering any serious consequences. But on the other hand, from some experiments made upon himself by Sir H. Davy, it would seem to be decidedly a narcotic poison. And again, the absence in both of these cases of any considerable discoloration of the skin, *engorgement* with blood of the liver, spleen and kidneys, and turgid state of the pulmonary vessels, right auricle and ventricle, and of the venous system generally, all of

which are most commonly found in asphyxiated persons, renders it probable that such was not the cause of their death, and heightens the probability of its having acted as a narcotic poison. We cannot urge the similarity of the morbid appearances found, to those produced by the narcotic poisons, for, according to the observations which have as yet been made upon the subject, they are so various that no reliance can be placed upon them. We may add however, that if the gas had acted simply by excluding the due proportion of oxygen, and thence as an asphyxiating one, most probably one of the individuals would have suffered some unpleasant sensation, that would have awakened them, and thus have prevented the fatal effects, or at least have caused some disturbance; whereas there was no indication of their having moved much: which we would readily expect, upon the supposition of their having respired a narcotic poison, producing stupor and insensibility.

6.—*Case of Imperforate Uterus. By Alexander Tweedie.*

In the fourth number (vol. ii, p. 258,) of these Reports, is given the early history of this case, together with an account of her first delivery, and the treatment then employed. With regard to that part of the history of this patient, it is sufficient for our present purpose to say: that she was a rather small woman, but had always enjoyed robust health—had menstruated regularly from her fourteenth year, up to the time of her marriage, which was in February, 1836, in her 23d year—that she never menstruated after she was married—that in November, 1836, she was admitted into Guy's Lying-in Charity—shortly afterwards had a slight sanguineous discharge from the vagina, which continued a day or two—that in about twenty-four or thirty-six hours from its cessation, she felt the

early symptoms of approaching labor—that soon the pains became pretty severe, and continued so but ineffectual, for some hours—that a smooth globular body was discovered to descend into the vagina at each contraction of the uterus—that no os uteri could be found—that the vagina could be traced throughout its whole extent, and was ascertained to be reflected from this globular body just as it commonly is from the neck of the uterus—that during the absence of pains, this body could be distinctly felt to be the head of the child with the relaxed coats of the uterus intervening—that a point was discovered, which seemed to be thinner than the rest, and an incision was made through it antero-posteriorly, to the extent of an inch and a half—that the waters immediately escaped—that subsequent pains caused a considerable extension of the opening by laceration, extending from the reflexion of the vagina at the ileo-pubic junction on the right side, obliquely across towards the sacro-iliac symphysis of the left—that after a protracted labor and considerable exhaustion, the patient was delivered of an asphyxiated child, which however was resuscitated—and that finally she recovered without any very unfavorable symptoms, leaving a small opening at the top of the vagina, with several cicatrized lines radiating from it, and without any cervix uteri.

The present article gives an account of her second confinement, which took place in January, 1838. Her health after her first delivery, had been tolerably good—she had miscarried twice, once at the second month, and the second time at the third month of utero-gestation—and she menstrated regularly during the whole period of lactation, when not pregnant. In this, her second confinement, when she had been in labour 8 hours, the uterine contractions became "intensely powerful," and on examination, there was found at "the ute-

rine extremity of the vagina, an irregular opening, which posteriorly and laterally seemed continuous almost with the vagina, but anteriorly was bounded by a strong, firm, unyielding, rigid edge, upon which at each pain the child's head was forcibly impelled." The opening was about "the area of a penny," and a cicatrized line was distinctly perceptible, running towards the left ilio-pubic junction. The uterine contractions having continued very powerful for twelve hours, without augmenting the size of the opening, it was determined to enlarge it; which was accordingly done to the extent of an inch with a probe-poined bistoury, after the manner of dividing a hernial stricture. Scarcely any blood followed the incision—the uterine contractions almost ceased for a time, and she felt faint. Upon the exhibition however of some weak brandy she revived, the contractions returned, and in less than an hour from the operation, she was delivered of a full grown child, which was asphyiated but restored after some difficulty. As in her former confinement she recovered without any difficulty—suffering only for a few days some tenderness upon pressure over the pubes—and some inconvenience from distention of the left breast by milk, there being in this case the singular coincidence of the imperforate state of the os uteri and absence of the neck of the uterus, with the want of a nipple upon the left breast.

In his remarks upon the probable explanation of this case, Mr. Tweedie observes:

"There being thus no cervix, it is evident that the glandular or follicular structure of the part cannot exist; but it does not therefore follow that there was no opening into the womb prior to impregnation. We believe there was an opening, but not surrounded by the glandular structure which naturally exists here: hence, when impregnation took place, the ordinary mucous secretion could not be found, to seal it up; and is it very unreasonable to imagine, that, under this malforma-

tion of parts, adhesive matter, instead of mucus, might have been poured forth, and thus, by adhesion, as pregnancy advanced, the orifice have become entirely obliterated?"

For the probability of such a state of things having existed in this case, he relies upon the facts of it, as already detailed: and in support of the possibility of such an adhesion's taking place, he quotes first: a case by Dr. A. S. Thomson, of a woman aged 65—who died of dry gangrene—in whom the uterus was found containing 8 quarts of dark brown fluid—its mucous membrane healthy—and the os uteri interiorly "as completely obliterated as if it had never existed"—and internally, or upon its vaginal face, but "faintly marked." Secondly, a case, in which a woman died in labour, from rupture of the cervix uteri, there being no trace of a normal os uteri, save something like a dimple at its ordinary site. Thirdly, a case by professor Hamilton of Edinburgh, of a healthy young woman, who had menstruated regularly up to the time of her first pregnancy—who went to the full term—had severe labour pains, which were ineffectual from an adhesion of the vagina to the extent of an inch, about two inches from its external orifice, which was opened by an incision, when shortly after the labour terminated favourably.

We have thus given all of the important facts connected with this most interesting case.

7.—*On Incision in cases of Occlusion and Rigidity of the Uterus. By Samuel Ashwell, M. D.*

The object of this paper of Dr. Ashwell's is to show—

"1st. That incision is the safest remedy, where the os is in a state of firm and complete closure; or, in other words, where the uterus, so far as its lower orifice is concerned, is imperforate: and

2dly. That in examples of such extreme rigidity of the os, where, after hours of strong uterine effort, the power of dilatation is entirely absent, whether such rigidity arise from disease in the structural organization of the part, or has resulted from previous laceration and ulceration, incision is the best and safest treatment; far preferable to protracted and powerful dilatation of the os by the finger; or, on the principle of non-interference, to leaving the case to the natural efforts."

Complete closure of the os-uteri may result from adhesive inflammation, in cases where the aperture is unusually small, and as a consequence of "morbid deposit about the os and cervix, produced either by chronic inflammation or occurring as the result of former laceration or ulceration."

The only condition with which occlusion may be confounded, is obliquity of the uterus; particularly ante-version, in which the os is thrown far upwards and backwards; towards or at the promontory of the sacrum. In regard to the practicability and mode of distinguishing occlusion from obliquity, the Doctor observes—

"There can be but little difficulty in the diagnosis of instances of complete and firm closure of the os. When parturient effort is really established, the lower portion of the uterus, in the form of a tense and large globular mass, is generally forced down very low, sometimes so far, as nearly to reach the external entrance of the vagina. Thus a finger—at all practised in these inquiries—*must* detect an aperture, if there be one; and, if not, the spot where the os uteri, at the time of conception, had been.

A repetition of uterine action will afford abundant opportunities for careful re-examination; so that no apology for indiscreet and dangerous delay can exist. If, too, a spot shall be discovered—more depressed, and of different structure to the surrounding parts, indicating the site of the os uteri at the time of impregnation, it is impossible then to doubt about tne nature of the case; and the only question remaining to be determined, is the precise method of relief."

When upon the subject of treatment, and after urging in strong terms, the impropriety in these cases of occlusion of venesection, and permitting the labor to be protracted to a great length of time, in hopes of discovering an os uteri, or that nature will remedy the evil, the Doctor says: "there are two methods of remedying the closure of this important orifice:

1. By such an amount of pressure by the finger, female catheter, sound or bougie, as shall puncture or open the occlusion: and

2. By incision made by a bistoury or knife."

The first named method may be employed when the occlusion is slight, and depending upon a thin membrane stretched across the os. But the author differs from some writers upon the subject, in thinking that incision is preferable, when this membrane has become completely organized, firm and unyielding. And he also recommends incision when the occlusion is dependent upon adhesion or morbid deposit. He assigns two reasons for this preference. First, that if the finger or bougie, &c., be employed, contusion of the part will necessarily follow, and thus render the patient liable to local or general uterine inflammation. Secondly, he thinks that there is less liability to extensive laceration where a free incision is made, than where a small puncture is made by any of the above mentioned methods. In support of this last position, he cites some cases in which incision was employed, with the effect first named.

Rigidity, which is treated of in the second division of his subject, and which is of much more frequent occurrence than occlusion, may (in that form of it which requires incision) result from a contracted orifice being surrounded by a "structure almost entirely undilatable," or from the cicatrization of abscesses, ulcerations, &c., or from a hard tumor or malignant deposit, which alters the structure of the part.

If the nature of the case be made out in the early stage of labor, it is considered not only prudent but highly important to resort to bloodletting, antimony, opium, &c., with the hope of producing relaxation. But when these means have been resorted to and a sufficient time has been allowed to give nature, with these adjuvants, an opportunity of overcoming the rigidity, and without success, the author says: "The case may then be treated by artificial dilatation or by incision, or it may be left to nature." To adopt the last course, he considers, would be to consign the woman to unlimited laceration or death by inflammation from protracted uterine contraction. To artificial dilatation he is decidedly opposed, for the same reasons which have been assigned against its employment in occlusion. In regard to incision he thinks it should be at once resorted to, wnen it is perceived that nature is unequal to the task. "If there be distressing and constant pain about the neck or body of the uterus, or in any other part; if the countenance becomes turgid and dark; if perspiration issues at every pore, and the pulse is full, strong, quick and incompressible; and if these symptoms continue, although perhaps somewhat lessened by bleeding and antimony; there can be no doubt that recourse snould be had to the incision." We should not wait until the woman is worn out by fruitless contractions, and is already in a state of collapse, when the operation would of course be unavailing towards saving the life of the patient.

After describing the manner of performing the operation, (which is so simple, and will suggest itself so readily, as to render a description of it unnecessary here) Dr. Ashwell devotes the balance of his paper to detailing some cases in which incision had been employed, in which no unpleasant consequences grew out of its use, and success attended it when early enough resorted to.

Selections from American and Foreign Journals.

A new article of the materia medica, the *Monesia*, of South American growth, having attracted no inconsiderable share of attention in the French metropolis, has been recently introduced to the profession in this country by Joseph G. Nancrede, M.D., whose opinion of the eclat which it is destined to win, may be inferred from his eagerness to be the first to extend a welcoming hand to the new comer. We introduce the stranger to our readers, by presenting Dr. Nancrede's letter.

To the Editors of the Medical Examiner:

GENTLEMEN:—With the intention of extending a knowledge of the properties of monesia, and of thus rendering practically useful, to our community, the very interesting paper of Dr. Martin Saint Ange, a translation of which appeared in the last number of your journal, I beg leave, through the medium of its pages, to acquaint the medical profession, that a portion of monesia, recently received from Paris, has been placed in the hands of Mr. F. Brown, corner of Fifth and Chesnut streets, where it can be obtained by those who may wish to prescribe it.

The preparations which have reached me, and which are to be obtained here, are, 1, the aqueous extract; 2, a syrup containing about six grains of the extract to the ounce; 3, a hydro-alcoholic tincture, containing about thirty-two grains to the ounce; 4, an ointment, containing one-eighth of its weight of extract.

While on this subject, I may be permitted to state, that having had in my possession for about a week, this new substance accompanied by the *Gazette Medicale de Paris*, of 19th

October, 1839, in which I read Dr. Martin Saint Ange's original paper, and also the *Notices sur le Monesia* by M. Bernard Derosne, to whom is due the credit of having introduced the new article to the notice of the profession, and who, in conjunction with M. O'Henry, has made of it a chemical analysis, I naturally felt desirous of being the first on this side of the Atlantic to test the properties of so interesting a remedy.

Accordingly I have exhibited it in five cases; and though it may be premature, in so short a period, to form any positive conclusions, yet I may be allowed to state, that, during the short period of its use in my hands, the medicine has realised the expectations held out by its friends in Paris.

I will merely add for the present, that I have exhibited the extract internally in the form of pills, in three cases, of which the first was diarrhœa, of long standing. Here its tonic and astringent qualities evidently arrested the disease. The two next cases were those of patients laboring under dysmenorrhœa; in both which, the symptoms have been materially improved under its exhibition. The fourth case is one of ulceration of the mouth, involving the tongue, of some week's duration, which I have treated by a solution of one part of the tincture, to five of water, as a local application, for the three last days, I think, with some benefit to my patient. The fifth case, is one of scrofulous ulceration, upon which I have applied the powdered extract twice. As yet, I cannot discover any change for the better.

These cases of the administration of the monesia, in several of its preparations, are recent, the oldest being only of a week's date, yet the results are so far encouraging, as to induce the wish that the American Medical Profession, which has now an opportunity of becoming acquanted with monesia, may fairly and fully test the properties of this new addition to the Materia Medica.

Walnut street, April 1840.

A translation of Dr. G. J. Martin St. Ange's paper was published in the London Gazette, and copied from thence into the Examiner; we cannot find room for it, but may say that it is a collection of the testimony of a number of eminent French practitioners in favor of the efficacy of monesia as a remedy for nearly all sorts of diseases:—diarrhœa, hæmoptysis, chronic coughs, scrofula, menorrhagia, dyspepsia, &c. &c.

In the Medical Examiner, of July 11th, 1840, a very interesting case of menorrhagia, of seven weeks' duration, cured by the extract of monesia, is reported by A. D. Chaloner, M. D., which is worthy of attentive perusal, and with it we shall close the testimony that has been adduced in favor of the new remedy.

On *Friday, July, 2d*, at 2½ o'clock, P. M., I was called to see Mrs. L——rs, æt. 35, of sanguine temperament, who was suffering under a severe attack of menorrhagia of *seven weeks' duration*. A month previous to the attack, she had miscarried, (three and a half months advanced in pregnancy,) and recovered under the usual course of treatment; but having over exerted her strength, and taken cold, she was attacked with a profuse "flow of blood from her womb," at first mistaken for the return of the catamenia. It increased, however, gradually, and she had recourse, previously to my visit, to various cold and astringent injections, in connexion with the elixir vitriol. These remedies failing, and the discharge increasing, she became alarmed and sent for me. I found her, on my arrival, sitting up in a chair, countenance pale and anxious, pulse slow, violent pains in lumbar and sacral region, and the slightest motion causing a profuse discharge. She was immediately placed in her bed, ordered to take *cold* drinks, and the following recipe: ℞. Acetat. Plumbi, ʒjss., G. Opii, gr. iv. M. ft. pil. No. xii. S. one every hour, and an injection per vaginam of ℞., Sulphat. Zinci, gr. viii., Aq. Font. fʒi.—her feet and legs were elevated by means of blocks of wood placed beneath the feet of the bedstead, and *perfect rest* enjoined.

July 3d. Had slept some, pulse more natural, skin cool, the discharge undiminished.

Treatment.—Increase the acetas plumbi, &c. to 8 grs. every hour, in conjunction with a third of a grain of opium; continue injections; ice in a bladder to be applied over the pubic region.

Vesper. Feels better; a perceptible diminution of the discharge; treatment to be continued as before.

July 4th. Having been prevented from seeing Mrs. L——rs to-day, my friend, Dr. N. Benedict, saw her for me, and finding the hæmorrhage returning, and bowels constipated, gave her the following ℞. Secale Cornutum, ʒi., Sacch. Albi., G. Acaciæ, q. s., Aq. Font. fʒvi., M. S. a table-spoonful every four hours,—also, these pills: ℞. Hieræ Picræ, ʒss., Sapo.

Venet. gr. iv., Syrup. Rhei, q. s., M. ft. pil. x., S. two every night.

July 5th. Bowels opened; discharge still continues, and profuse, and increased by motion; treatment continued.

July 6th. Returned to the city and saw her with Dr. B. No abatement of the discharge. Treatment—to take of the infusion of secale cornutum a table-spoonful every hour; elixir vitriol, 30 gtt. in "eau sucre," at the same time.

Vesper. Discharge continues; feels very weak. Treatment—℞. Secale Cornutum Pulv. Sacch. Alb. āā ℈ij, M. ft. pulv. No. viii., S. one every half hour until pains are produced.

July 7th. Has taken *seventy grains* of ergot without causing uterine pains, or affecting the discharge. Treatment—℞. Acet. Plumbi ℈jss., Tict. Opii f℥j., Aq. Font. f℥ij., ft. enema, S, one half at once, the remainder in an hour; elixir vitriol, as a tonic, iced drinks, astringent injections per vaginam, warming plaster to sacral region.

July 8th. The uterus, on examination per vaginam, was soft and spongy; in the commencement of the treatment it was slightly swollen, and the anterior lip enlarged; pain in the back and the discharge continue. Treatment—℞. Tinct. Cinnamon f℥ij., S. thirty drops every hour; ℞. Prussiat Ferri, ℥j., G. Aloes, gr. v., Conserv. Rosar. q. s., M. et divid. in pil. xx. S. one four times daily; alum water injections, a compress of folded napkins, and a broad roller, applied tightly over the uterine region.

Vesper. Feels better; bowels opened freely; to take but two pills and tinct. cinnamon, as before; discharge as before.

July 9th. The discharge having increased in frequency and quantity, I procured twelve pills of the EXTRACT OF MONESIA, of three grains each, and at 2 o'clock, P. M. gave her six pills—*one* to be taken every *hour and a half*, until they had an effect upon the discharge.

Vesper. Has taken about three pills, (3 grs. each;) the first pill having caused *pretty severe uterine pains*—as she expressed herself, "*as if she was going to be sick*," (i. e. be confined;) after taking the third pill, the discharge was "*a mere show.*" Treatment—to take the remaing three pills, one every two hours.

July 10. Slept well; pain in the back gone; *the discharge entirely ceased;* feels well; pulse natural; appetite good; skin cool; the uterus contracted and free from pain, on examination per vaginam. Treatment—perfect rest, nourishing diet and cold drinks.

Vesper. Improving; no return of the discharge.

July 11. Still *no return* of the hemorrhage; gaining strength; to take tonics, &c.

July 12. Appetite indifferent; *no return.* ℞. Pulv. Colombœ, Pulv. Sub-Carb. Ferri, Rhei, Zingiberis aa ʒj. M. ft. chart. No. xii. S. one three times a day in molasses. Infusion of Prunus Virginiana, a wine-glassful three times a day. Diet—oysters, &c.

Vesper. Has had, owing to the exertion required in changing her bedding, some slight discharge; checked by one or two pills of the *monesia*, every four hours.

July 16. Still using tonics; no pain; *no return of the hemorrhage;* feels well; anxious to get out of bed.

Supposing that the above case may be interesting as showing, that in the *Extract of Monesia* we have a substance capable of causing powerful uterine contractions, even in small doses, and of arresting profuse menorrhagia of long duration, after the exhibition of all the usual remedies had failed, even when pushed to the extreme; and trusting that this hasty outline of the *effects of monesia* in this, to me, troublesome (although not uninteresting) case, may be of some interest to members of the profession generally,

I remain, gentlemen,
Your obedient servant,
A. D. CHALONER, M.D.

Philadelphia, July 10, 1840.

In this case, the *monesia* appeared to arrest the hemorrhage by exciting contraction in the muscular fibres of the uterus, in consequence of which its tissue was condensed, and compression made upon the bleeding vessels. Muscular atony is a frequent cause of metrorrhagia, occurring after abortion or labor at the full term, and in such cases we have been long accustomed to prescribe the *ergot*, in pills or emulson, with the most satisfactory results; indeed, in our hands, it so uniformily succeeds that we are not a little surprised at its failure in Dr. Chaloner's case. It is scarcely necessary to add that the sugar of lead, though a remedy of decided efficacy, when hemorrhage arises from a morbid state of the exhalent vessels, cannot possibly avail when impaired muscular contractility permits the blood to escape from their patulous mouths. On the contrary, it is probable that the lead,

if administered in sufficient quantity, might *paralize* the uterine muscular fibres, as it is known to do certain of the voluntary muscles, and thus aggravate the discharge. Be this as it may, it is certain that lead is not to be confided in as a remedy for this special hemorrhage, and that ergot is calculated directly to fulfil the indication which it presents. If it should be found, on further trial, that the monesia belongs to the same class of remedies as the ergot and acts with greater certainty and efficiency in exciting uterine contraction, it will prove a valuable addition to the materia medica.

H. M.

THE WESTERN JOURNAL.

No. IX.

LOUISVILLE, SEPTEMBER 1, 1840.

THE NATCHEZ TORNADO.

We are happy to learn by a letter from Prof. Forshey, late of Jefferson College, Mississippi, that he is engaged in preparing a volume on the Tornado at Natchez. He thinks its phenomena highly instructive to the scientifiic meteorologist, and says they have an important bearing on the Espian Theory. From our knowledge of the Professor's qualifications, and his being on the spot at the time, we anticipate a work of high scientific interest. It will probably appear in October. D.

NASAL POLYPUS CURED WITH SANGUINARIA CANADENSIS.

Being lately in Newark, Ohio, Dr. Brice, for more than 30 years a respectable practitioner of that place, narrated to us three cases of polypus of the nostril, which he had permanently cured by the application of the root of the sanguinaria canadensis. One of the patients was a youth, in whom the polypus projected out of the

nostril. A physician in a neighboring town tore away a part or the whole of it, and the operation was followed by profuse hemorrhage. Sometime afterwards the doctor saw him, and the polypus again extended beyond the alœ nasi. The application of the powdered root and the decoction of the sanguinaria soon caused it to assume a pale color and shrink up. Under the continued use of the medicine he entirely recovered.

Another patient was a little girl, in whom the polypus was distinctly seen, but it did not present itself entirely. The same applications effected a radical cure.

A third was a man rather advanced in life, whose nose was much obstructed by the size of the polypus, but it did not descend to the lip. It was permantly removed by the same treatment.

We do not recollect to what extent the sanguinaria has been employed in the treatment of polypus, and are writing these memoranda remote from all books of reference. Should the reader be already familiar with the use of this remedy, he cannot charge us with prolixity in this testimony of its efficacy. D.

STRAMONIUM IN INCIPIENT TRISMUS.

Dr. Brice, whom we have just quoted, was called to a man who had received a wound of the scalp two days before, and found his jaws immovable, and other portons of his muscular system than the maxillary showed incipient tetanus. In the course of two hours, the doctor gave him two tea spoonfuls of the powdered seeds of stramonium; immediately afterwards the spasms ceased. D.

FAMILY CATARACT.

Although cataract is not unknown as a family disease, we have thought the following example worthy of being recorded.

Near Chillicothe, in Ohio, there lives a family by the name of Bunn, in which five cases of that disease have occurred among nine children. We shall say a few words of each, beginning with the oldest.

Hannah, the oldest, near 36, with hazle eyes and reddish chestnut hair, when 25, presented in the centre of her left eye a small white speck, which gradually enlarged till she could only see objects obliquely. About three years after it commenced the sight of the other began to fail. Twelve months ago we found them both cataracts, with capsular opacity. The left eye was weak and we operated on it without subsequent inflammation. A second operation has lately been found necessary, and is likely to be successful.

2. Mary, aged thirty-four, has dark hazle eyes, and hair nearly black—sight good.

3. David, next in time, now twenty-eight, with hazle eyes, began to lose his sight at seventeen, two years afterwards applied to us in Cincinnati, with capsular cataract. A single laceration, not followed by inflammation, removed it.

4. Sarah Ann, now twenty-four, with hazle eyes, and chesnut colored hair, when nine years old, was discovered to have "something" in the pupil of the left eye. In two years she was nearly blind in both eyes. When she was fourteen years old, the capsules of both eyes were successfully lacerated by Dr. French. When the eyes of this patient, the pupil being somewhat dilated, are looked into obliquely it may be seen that the posterior capsule was opaque; the outer ends of the white radiating bands still remaining there.

Nancy with black hair and eyes, died at the age of twenty-two, with good eye sight.

5. Ezekiel, now twenty-two, with hazle eyes and dark hair, when eighteen, observed some failure of sight; and discovered, while he could still see to shoot with a rifle, that he missed the object—the ball invariably passing to the left of the object. When it was fifteen yards off, the ball would generally strike about five inches from it. From the beginning, his eyes although uninflamed were somewhat intolerant of light. In the summer of 1839, we found each eye with central opacity and opake bands radiating from it, the latter in the posterior capsule. Sight much reduced. The capsule of the right eye was lacerated without subsequent inflammation. Two months afterwards, from cold, a severe and protracted inflammation occurred, and we lately found a large fragment of the capsule, *attached* to the outer pupillary margin of the iris, and projecting into the axis of vision. It has been removed, and his sight restored—no inflammation having followed.

6. Joseph aged nineteen, has chesnut hair and hazle eyes—sight unimpaired.

7. Elizabeth aged seventeen years, with hazle eyes and dark brown hair, has intolerance of light, dimness of vision, and the appearance of cataract forming in both eyes.

8. Abraham, aged thirteen, has hair of a flaxen color, and eyes flaxen grey. His sight said not to be very good.

9. Clarissa, the youngest, nine years old, has eyes nearly black, and hair becoming so. Sight good.

The father of these children, now dead, had good vision. Eyes flaxen grey, hair black.

The mother, of a sanguine temperament, has both eyes and hair of a very dark hazle. Her sight is good. Her mother had blue eyes and red hair—her father black hair and eyes. From this union seems to have resulted the hazle chesnut and auburn hue of the coloring matter of the iris and hair of the mother and children. The mother's sight, however, is good; and no case of cataract is known to have existed among her ancestors, or her husband's. All the children are well developed and healthy. D.

EFFECTS OF CAMPHOR ON VEGETABLES.

"The stimulant effects of camphor upon the human and some other animal bodies are well known; but those on vegetables are not only new, but astonishing in their nature. A piece of the woody stem of the tulip-tree, with one flower and two leaves, taken out of a pot of water, containing several other flowers of the same plant, all, to appearance, in the same state, was placed in eight ounces of water, which had been stirred up for some time with one scruple of good camphor. In a little while, an unusually lively appearance became remarkable in the flower in the camphor; while the others, though they had the benefit of a larger quantity of water, were sensibly drooping.

"The two leaves first elevated themselves considerably on their foot stalks; the flower expanded more than in a natural state; the stamina occhives receded from the pistillum; and the three leaves of the calix, or flower cup, were remarkably reflected back, and grew extremely rigid and elastic. The internal surface of the petals of the flower perspired considerably, though a similar perspiration could not be perceived in the flowers of the same room and temperature. The camphorated plant continued in a very invigorated state for two whole days, after which it began to droop; but the

leaves drooped and decayed sooner than the flower. The other flowers and leaves of the tulip-tree left in simple water, did not live more than half as long as that in the water impregnated with camphor.

"Notwithstanding these surprising effects, no odor of camphor could be traced inany part of the branch, except what was immersed in the fluid. This circumstance seems to render it probable that the camphor was not absorbed by the plant, but that it exerted its remarkable influence entirely through the solids to which it was immediately applied. The appearance, however, was very striking, and might be compared to the beneficial effects of opium on the human constitution. Several other experiments were made with camphor on plants, in all of which was very evident that camphor operated as a powerful and wholesome stimulant. A stalk of yellow iris, with one expanded flower, was taken out of a phial of water in which it had been placed more than a day.

"The flower had begun to droop; but in a very few minutes after being put in a phial of the same size, containing a few grains of camphor, it began to revive, and continued in a vigorous state for many hours. As camphor is but very sparingly soluble in water, it is natural to conclude that the stimulant effects were produced by a very small part of the quantity mingled with the water. This discovery might induce us to make experiments with camphor as a manure, if the expense of trying them on a scale sufficiently large were not excessive. But still, we may apply the camphor in the manner before mentioned; and can that be termed a useless purpose? A few grans of camphor acting as a cordial, will revive a drooping plant, increase its beauty and prolong its existence. In the eye of the florist, these are objects of no mean importance."—*Burt's Observations on the Curiosities of nature.*

REMARKS.

The foregoing extract is from a late number of the National Gazette, published in Philadelphia. The editor of that excellent paper will confer a favor on the writer of these brief and hasty *remarks*, by an early republication of them in his valuable columns.

However interesting or "astonishing in its nature" may appear the fact, that "camphor produces stimulant effects on vegetables," the knowledge of that fact is far from being "*new*." It is certainly so old as to be a product of the last century; whether any older, we are not prepared to say.

The question was once made a subject of debate or conversation in the Philadelphia Medical Society, we think during the sessions of that Institution, in the winter of 1796, '97 or '98; and in the course of the next spring and summer, Dr. Caldwell, then a resident

member of the Society, closed the controversy, if such it was, by a series of experiments satisfactory to himself, as well as to others.

The vegetables on which the Doctor chiefly experimented, were the common Althea, and a species of the Magnolia; and their flower-buds were the parts he especially selected as his subjects.

In the course of his experiments he sometimes lopt from the plant the twigs containing the buds, and immersed them in water holding camphor in solution; and at other times, suffering the twigs to remain on their parent-limbs, he wrapt around them a few folds of cloth, or small bundles of cotton, which he kept constantly moist with the camphor-solution. And, in every instance, the growth and development of the bud was hastened and invigorated, in a remarkable degree. The following was his mode of proceeding.

He selected on the same plant, several twigs containing flower-buds alike in age, healthfulness, and vigor. The twigs moreover were on parts of the plant remote from each other, in order that those of them whose buds were to serve as standards of natural development, might not be acted on by the camphor-exhalation.

Some of these twigs he moistened with the camphor-solution, some with water holding in solution carbonic acid, others with river or rain-water, and the remainder he left to the action alone of the atmosphere, and its native humidity, whether of rain or dew. And the results of his experiments were exceedingly uniform.

The camphorated buds always expanded with far the highest degree of activity. Next in activity were those wet with acidulated water. Still less rapid was the development of the buds moistened with rain or river-water. And when the atmosphere contained but little moisture, the growth and expansion of those not moistened at all were the least active and vigorous of the whole. Nor was this stimulating action of camphor and carbonic acid confined to the flower-buds. The *leaves* of the moistened twigs were similarly influenced by it; though not perhaps to the same extent.

In another course of experiments, by the same gentleman, assafœtida was employed, as the stimulant material, with similar results. The flowers and leaves were uniformly quickened by its action, in their expansion and growth. Nor was this all. The gentle stimulation of electricity produced also on vegetables invigorating effects. They grew under its influence, and put forth their flowers, with superabundant activity.

To the confirmation and establishment of the same principle,

the following experiment farther contributed. Three small grass-patches, distant from each other, were selected. One of them was watered with a camphor-solution, another with a weak solution of assacœtida, and the third with common water; and the results were analogous to those already stated. The grass of the two spots watered with the stimulating solutions grew and flourished with *unusual*, the other with only *common* luxuriance and rapidity.

Shortly after the foregoing facts became known, the late Professor Barton instituted a series of similar experiments, with corresponding results. And, a year or two afterwards, Dr. Church, late of Philadelphia, wrote and published an Inaugural Dissertation, on the same subject. The experiments detailed by him were numerous and well conducted; and their issues were identical with those of the preceding experiments, The growth of vegetables was always hastened by the action of the several stimulants he employed.

The dissertation by Dr. Church is no doubt to be found in the Library of the Pennsylvania Hospital; and it is believed to contain a note from Dr. Caldwell, on the effects of stimulation on vegetable growth.

At this period Dr. Caldwell was engaged in the study of *Philosophical* Botany, especially of the physiology and habits of plants. On certain *night-sleeping* plants he made some experiments not perhaps altogether unworthy of notice. His object was to prevent them from sleeping, which he attempted to do in the following manner.

The somnolent action or rather *inaction* of those plants is known to commence with the commencement of twilight, or a little earlier. To bar their slumbers therefore, the doctor, just before their leaves began to "droop and drowse," commenced on them his process of camphor or assafœtida-stimulation; and, as twilight descended and was just beginning to thicken about them, he added the stimulant action of *artificial light*. This he did, by placing around the plants experimented on, a number of powerfully reflecting lamps, lit up to the highest pitch of brilliancy. And though the result did not quite equal his expectation, it did so to a considerable extent. The stimulation employed rendered the sleep of some of the more sensitive plants, especially we think of the young locust, the mimosa sensitiva, and the eastern acacia, considerably less profound than usual.

But how, we ask, is it possible for these things to be otherwise?

The analogies between vegetables and animals are much greater and more numerous, and the differences between them immeasurably less, than than they are generally supposed to be. So true is this, that no naturalist has yet been able to say, with positive definiteness, where the one class of beings ends, and the other begins.

Vegetables, in common with animals, are organized, living, and susceptible beings—susceptible we mean of vital impression, and capable of vital action and growth. By no physiologist will these positions be contradicted or questioned. They are axioms in the science of organization anp life. Every vital action moreover, whether in vegetables or animals, is as certainly and obviously the product of stimulation, as the descent of a falling body is the product of gravity. This we repeat is an axiom in physiology.

It is in consequence of the stimulation of heat and light and food and moisture, that vegetables take on action and growth in the spring. For food stimulates them, and produces vital action in them, as certainly as it does in relation to animals. And a leading reason why vegetables grow more vigorously, rapidly, and with greater luxuriance in tropical, than they do in temperate and frigid climates, is because they are more abundantly stimulated by heat.

In a word; it is pride and ignorance, much rather than a knowledge of nature, and a correct and becoming sense of his own standing, that inflates man with the vain but flattering belief, that he is demigod or a god, compared with a mushroom. A more thorough knowledge of things as they are, than he now possesses, will yet convince him that the real difference is much less than he now imagines it.

This view of things is greatly strengthened by the late observations of M. Turpin, communicated to the Academy of Science, in Paris, in the course of which he discovered the actual *transformation of globules of milk* into a peculiar species of *mucor or mould.* The mucor he contends did not spring out of the globules, as plants do out of the ground in which they are rooted. They were transformed and converted into the mucor, as seeds are into the plants which they produce. The globules moreover, having given birth to the mould, retained their formal existence no longer, but entirely disappeared, as seeds do after the birth and temporary nourishment of their plants. C. C.

Fig. 1

Fig. 2.

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